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L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

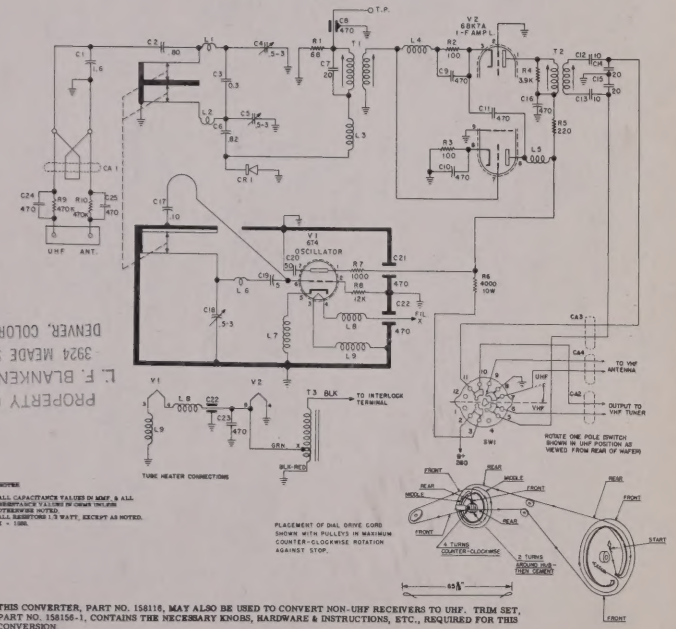
The PHOTOFACT Servicer

SET 389 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ FEB. 1, 1958

The service information in this Servicer provides data on models which we have been unable to present in PHOTOFACT Folders. The receivers are not in current production; a requirement for PHOTOFACT coverage, and we are therefore presenting schematics and supplementary data that will be of assistance when servicing these models.

UHF CONVERTER

(Part No. 158116)



NOTES
ALL CAPACITANCE VALUES IN MMF. & ALL RESISTANCE VALUES IN OHMS UNLESS OTHERWISE NOTED.
ALL RESISTORS 1/2 WATT, EXCEPT AS NOTED.
K = 1000.

THIS CONVERTER, PART NO. 158116, MAY ALSO BE USED TO CONVERT NON-UHF RECEIVERS TO UHF. TRIM SET, PART NO. 158156-1, CONTAINS THE NECESSARY KNOBS, HARDWARE & INSTRUCTIONS, ETC., REQUIRED FOR THIS CONVERSION.

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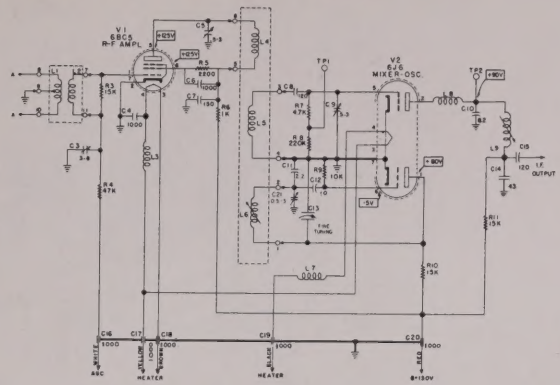
VHF TUNER SCHEMATIC

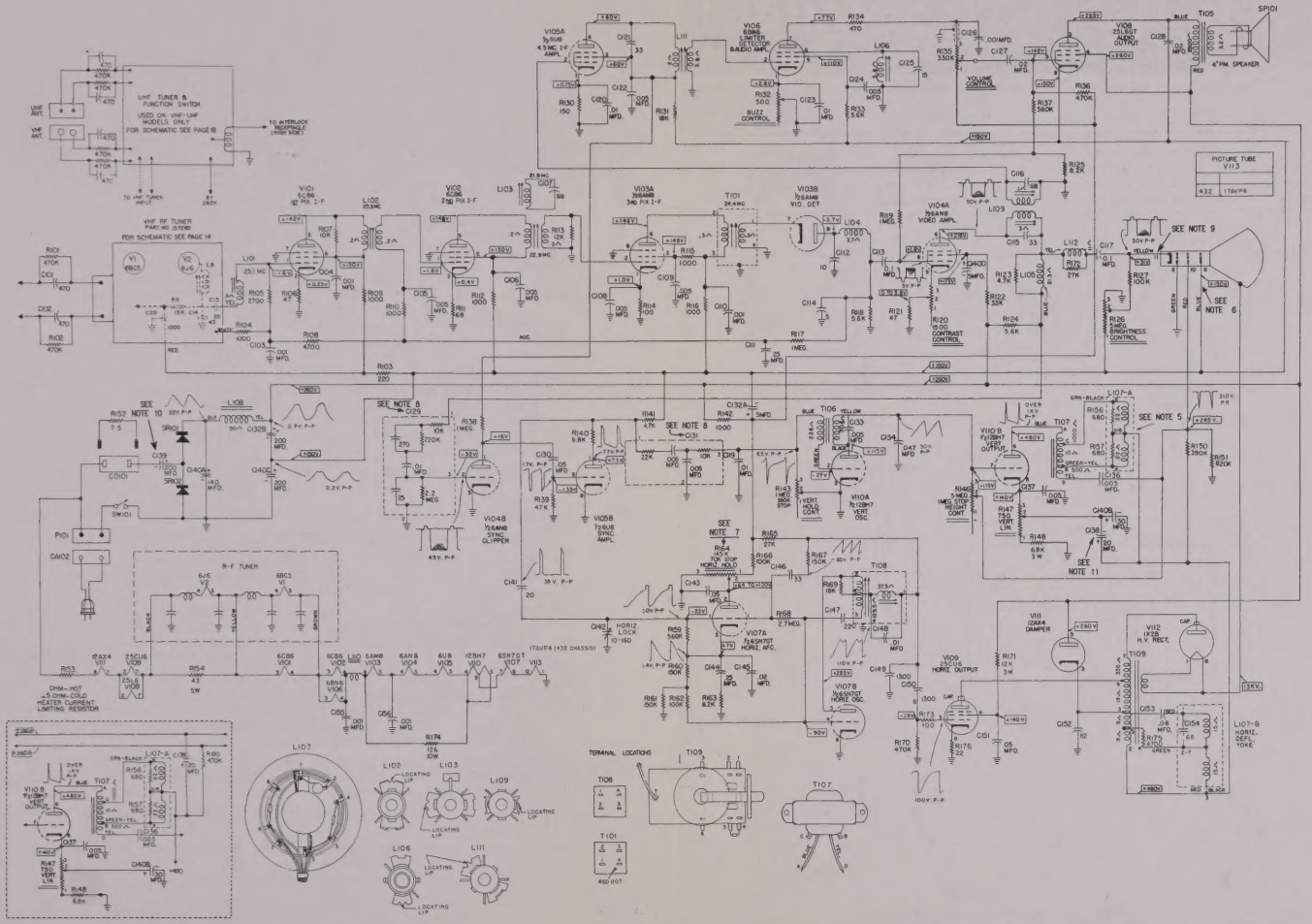


NOTES

1. All D.C. voltages measured with an electronic voltmeter connected from socket lug to chassis. Some voltages are variable depending upon signal input. Voltages shown were measured with a signal voltage of 850,000 microvolts and with a normal picture on the picture tube and the contrast and brightness controls set for 50 volts peak to peak on the cathode (pin 11) of the picture tube. Socket voltage tolerance 10%. For table of socket voltages under no-signal conditions, see page 11.
2. Supply voltage, 117 volts, 60 cycle AC.
3. K = 1000.
4. All capacitance values in mmf. and all resistance values in ohms unless otherwise noted.
5. Lug 3 connected to boost voltage and Lug 3, 8 and 5 connected internally.
6. Better focus may be obtained with replacement picture tubes if the electronic focus anode is connected to a point other than +150 volts. Suggested points to try are: chassis ground, +260 volts, +285 (picture tube, pin 10) and +480 volts.
7. The Horizontal Hold control R164 used in chassis 432 has an overall resistance of 145,000 ohms, with a 70,000 ohm stop. This control is marked with Part No. B-157802-1-2 or B-157802-1-3. It is directly interchangeable with an earlier control marked B-157802-1-1, which has an overall resistance of 170,000 ohms, with a 70,000 ohm stop. It will be noticed, however, that the control with the lower overall resistance gives a somewhat wider hold range.
8. On the Vertical Integrating Network C131, leads 2 and 3 are closely spaced, and lead 2 is the middle lead. On the Sync Take-Off Network C129, leads 1 and 2 are closely spaced, and lead 2 is the middle one. When replacing either of these units, the leads must be connected as shown in the schematic in order to obtain satisfactory operation.
9. The yellow lead wire from pin 11 CRT is taped to the rest of CRT lead wires in late models. This was done to reduce the possibilities of regeneration due to the yellow wire getting too close to the I.F. input coil.

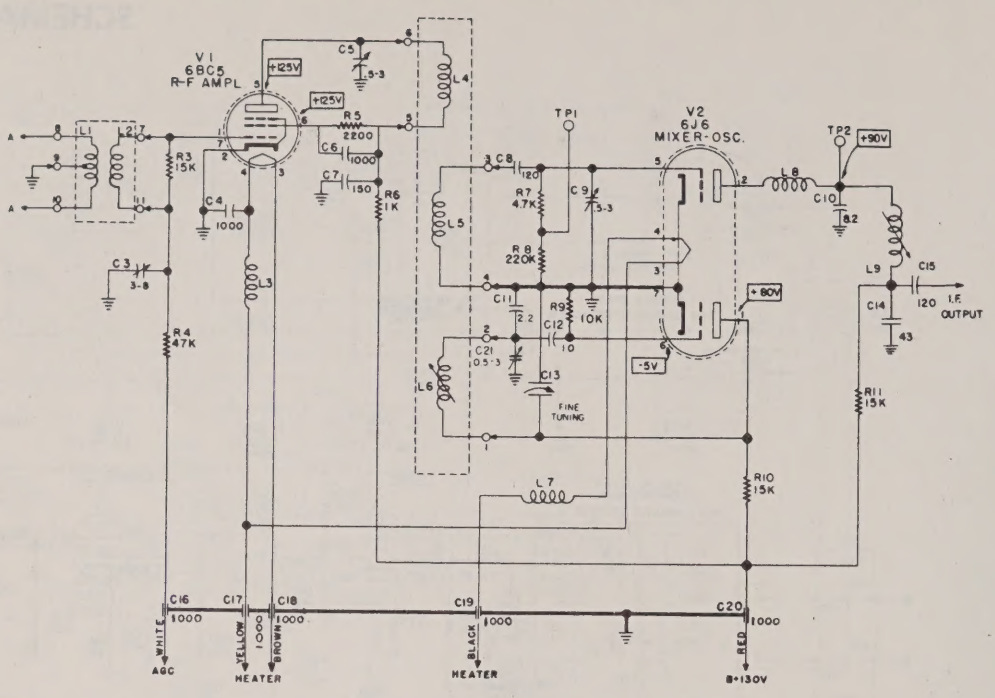
   If regeneration occurs in early model sets, the taping of the yellow lead wire will help to reduce it.
10. In some early production chassis 432 (not designated by a code letter), C139 is a 140 mfd., 300 v., electrolytic capacitor, Part No. 157837-1. For replacement purposes, use either Part No. 157837-1 or 158557-1, whichever may be available.
11. The inset at the lower left of the complete schematic wiring diagram shows a slight variation in circuitry which was used on some early production chassis 432. The code letter following the chassis number was not changed to designate this change in circuitry, because of the relatively small number of chassis on which it was used.

SCHEMATIC WIRING DIAGRAM CHASSIS 432



SCHEMATIC DIAGRAM COURTESY CROSLEY DIV. AVCO MFGR. CORP.

VHF TUNER SCHEMATIC



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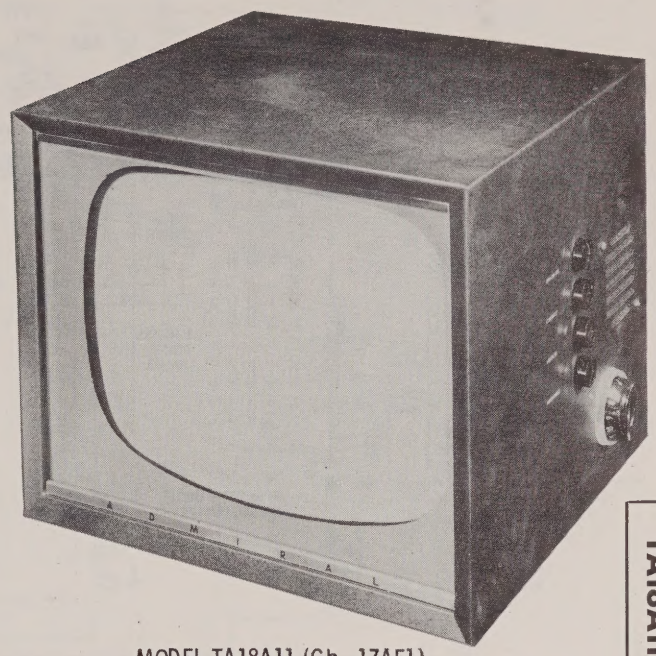
PHOTOFACT* Folder

*TRADE MARK

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

ADMIRAL MODELS
TA18A11, TA18A12, TA18A13 (Ch. 17AF1)

ADMIRAL MODELS
TA18A11, TA18A12, TA18A13 (Ch. 17AF1)



MODEL TA18A11 (Ch. 17AF1)

DISASSEMBLY INSTRUCTIONS

CABINET REMOVAL

1. Remove 8 push-on type knobs from the side.
2. Remove 8 metal screws holding the rear cover. Remove the rear cover.
3. Remove the speaker leads.
4. Remove 6 cabinet bolts from the bottom.
5. Remove the cabinet.

CAUTION NOTE

ONE SIDE OF AC LINE CONNECTED TO CHASSIS
Care should be exercised when connecting test equipment or physically contacting the chassis.

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TRADE NAME	Admiral Models TA18A11, TA18A12, TA18A13 ..... Chassis 17AF1
MANUFACTURER	Admiral Corp., 3800 W. Cortland St., Chicago 47, Illinois
TYPE SET	Television Receiver
TUBES	Eighteen
POWER SUPPLY	110-120 Volts AC, 60 Cycle RATING 135 Watts, 1.2 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF oscillator is possible by removing the channel selector and fine tuning knobs. Set the fine tuning at the center of its range. The adjustments are accessible, one at a time, as the channel selector is rotated. Adjust for best picture and sound.

PICTURE TUBE SAFETY GLASS CLEANING

Pull off the name plate along the bottom of the safety glass. Pull glass out at the bottom and slide down to remove.

FOCUS

The focus may be varied by the position of a strap on the base of the picture tube. The strap can be connected between pins 6 and 2 or 6 and 10. Readjust the ion trap for the best focus consistent with maximum brightness.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

The horizontal frequency coil is used as the horizontal hold control. Adjust the horizontal hold until the picture synchronizes horizontally. (For location, see tube placement chart).

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the ratio detector secondary (A9) located on bottom of chassis.

FUSE DEVICE

A 7.5Ω fusible resistor (R101) is used for LV power supply protection. (For location, see tube placement chart).

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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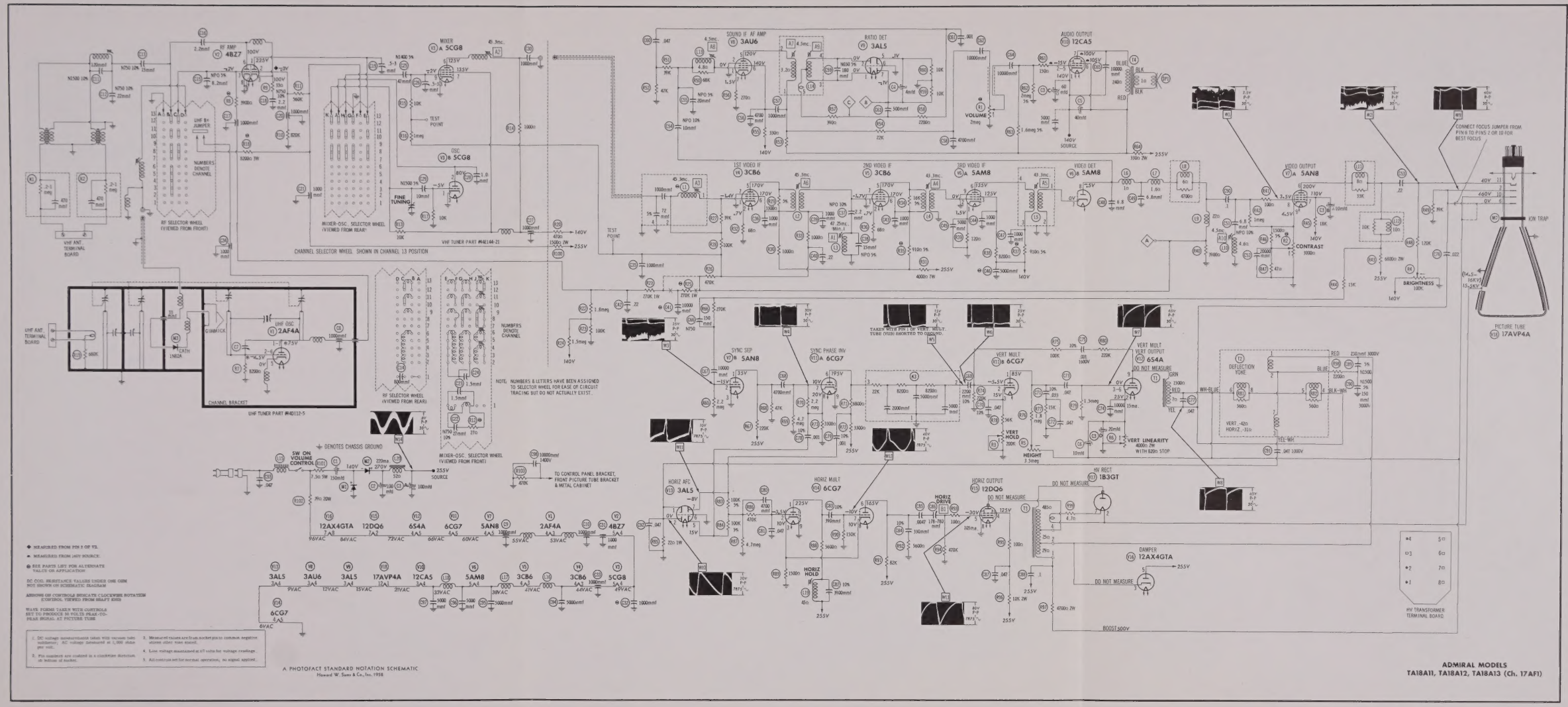
H32i

FOLDER 1


RF AMP V2 4BZ7
MIXER V3A 5CG8
OSC V3B 5CG8
SOUND IF AF AMP V5 3AU6
RATIO DET V5 3AL5
AUDIO OUTPUT V10 12CA5
1ST VIDEO IF V4 3CB6
2ND VIDEO IF V5 3CB6
3RD VIDEO IF V6A 5AM8
VIDEO DET V6B 5AM8
VIDEO OUTPUT V7A 5AN8
SYNC SEP V7 5AN8
SYNC PHASE INV V11A 6CG7
VERT MULT V11B 6CG7
VERT MULT V12 6S4A
HORIZ AFC V13 3AL5
HORIZ MULT V14 6CG7
HORIZ OUTPUT V15 12DQ6
HV RECT V17 1B3GT
DAMPER V16 12AX4GTA
UHF OSC V1 2AF4A
UHF TUNER PART #4D112-5
VHF TUNER PART #4E144-21
CHANNEL SELECTOR WHEEL SHOWN IN CHANNEL 13 POSITION
RF SELECTOR WHEEL (VIEWED FROM FRONT)
MIXER-OSC. SELECTOR WHEEL (VIEWED FROM REAR)
RF SELECTOR WHEEL (VIEWED FROM REAR)
MIXER-OSC. SELECTOR WHEEL (VIEWED FROM FRONT)
NOTE: NUMBERS & LETTERS HAVE BEEN ASSIGNED TO SELECTOR WHEEL FOR EASE OF CIRCUIT TRACING BUT DO NOT ACTUALLY EXIST.
VOLUME
FINE TUNING
CONTRAST
BRIGHTNESS
HORIZ HOLD
HORIZ DRIVE
VERT HOLD
HEIGHT
VERT LINEARITY
ION TRAP
PICTURE TUBE V10 17AVP4A
DEFLECTION YOKE
HV TRANSFORMER TERMINAL BOARD
CONNECT FOCUS JUMPER FROM PIN 6 TO PINS 2 OR 10 FOR BEST FOCUS
TEST POINT
SW ON VOLUME CONTROL
TO CONTROL PANEL BRACKET, FRONT PICTURE TUBE BRACKET & METAL CABINET
CHANNEL BRACKET
VHF ANT. TERMINAL BOARD
UHF ANT. TERMINAL BOARD
DENOTES CHASSIS GROUND
DO NOT MEASURE
BOOST 500V
140V SOURCE
255V SOURCE
12AX4GTA 7A8 96VAC
12DQ6 7A2 84VAC
6S4A 4A5 72VAC
6CG7 6A5 66VAC
5AN8 4A5 60VAC
2AF4A 4A3 55VAC
4BZ7 5A4 53VAC
3AL5 3A1 9VAC
3AU6 3A1 12VAC
3AL5 3A1 15VAC
17AVP4A 12A1 21VAC
12CA5 3A4 21VAC
5AM8 5A4 30VAC
3CB6 4A2 41VAC
3CB6 4A2 44VAC
5CG8 5A4 49VAC
6CG7 6A2 6VAC
◆ MEASURED FROM PIN 3 OF V3.
▲ MEASURED FROM 140V SOURCE.
● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION CONTROL VIEWED FROM SHAFT END
WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 30 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltage measured at 1,000 ohms per volt.
2. Pin numbers are counted in a clockwise direction as bottom of socket.
3. Measured values are from socket pin to common negative unless other wise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation, no signal applied.
A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958
ADMIRAL MODELS
TA18A11, TA18A12, TA18A13 (Ch. 17AF1)

TUBE PLACEMENT CHART

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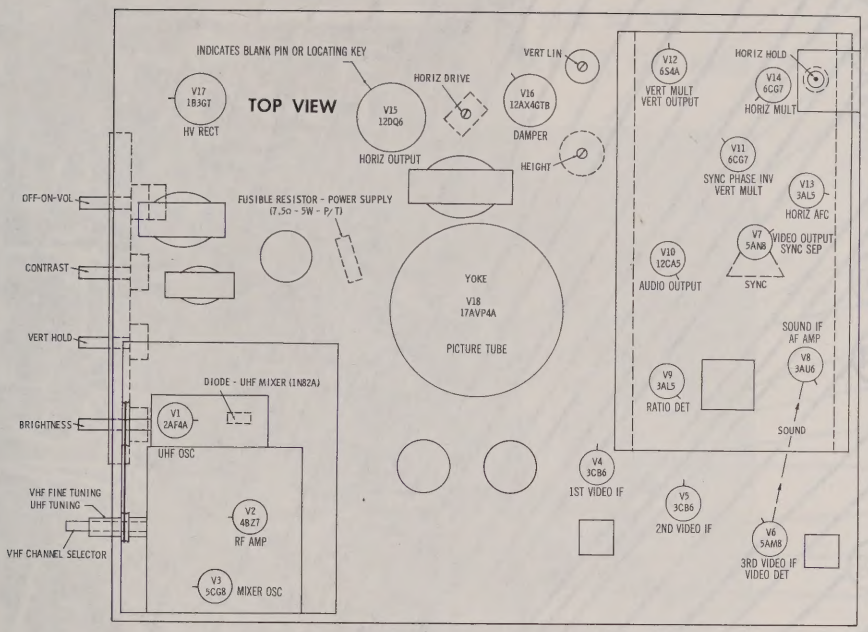


TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

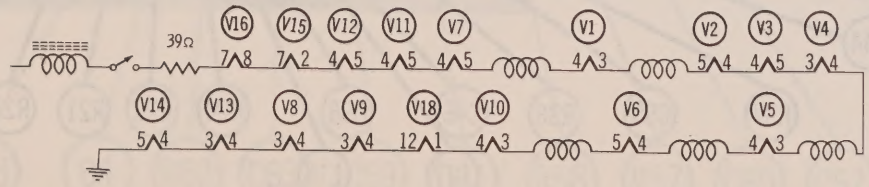
POWER SUPPLY FAILURE
No raster, no sound - **Fusible Resistor (R101), Rectifier (M1, M2)**

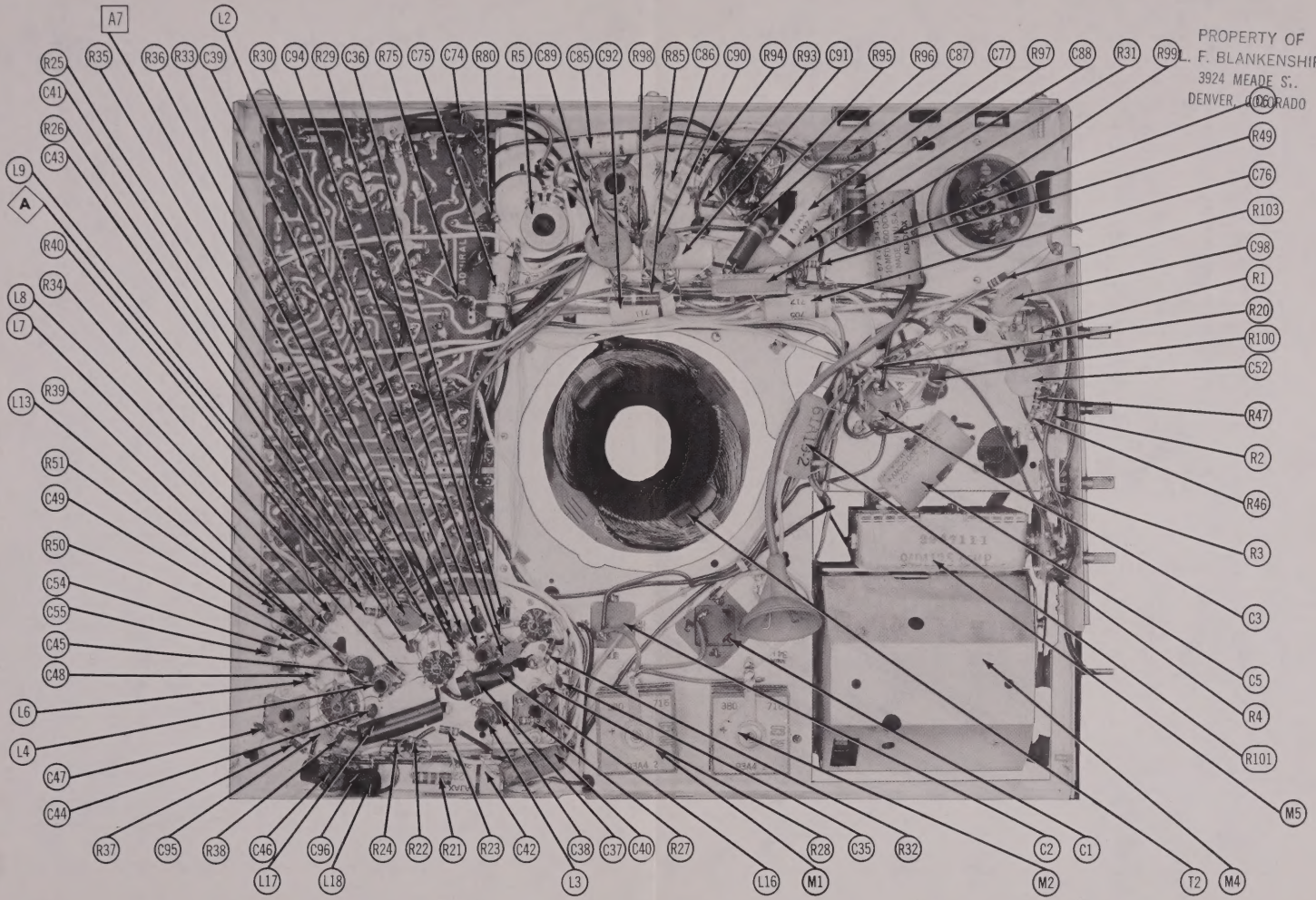
LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V4, V5, V6, V10**
No pic, no sound, has snow - **V2, V3, V4, V10 (V1 UHF only)**
No pic, has sound, has raster - **V7, V18, V10**
Has pic, no sound - **V8, V9, V10**

SYNC FAILURE
No vert. sync - **V7, V11**
No horiz. sync - **V7, V11, V13**
No vert. or horiz. sync - **V7, V11**

SWEEP FAILURE
No raster, has sound - **V13, V14, V15, V16, V17, V18**
No vertical deflection - **V11, V12**
Poor vert. linearity or foldover - **V11, V12**
Poor horiz. linearity or foldover - **V14, V15, V16**
Narrow picture - **V14, V15, V16, M1, M2**
Vert. off freq. - **V11, V12**
Horiz. off freq. - **V14**

This receiver employs tubes used in a series filament network, an open filament in any tube in the series will cause the set to be inoperative. (See circuit below).





CHASSIS BOTTOM VIEW

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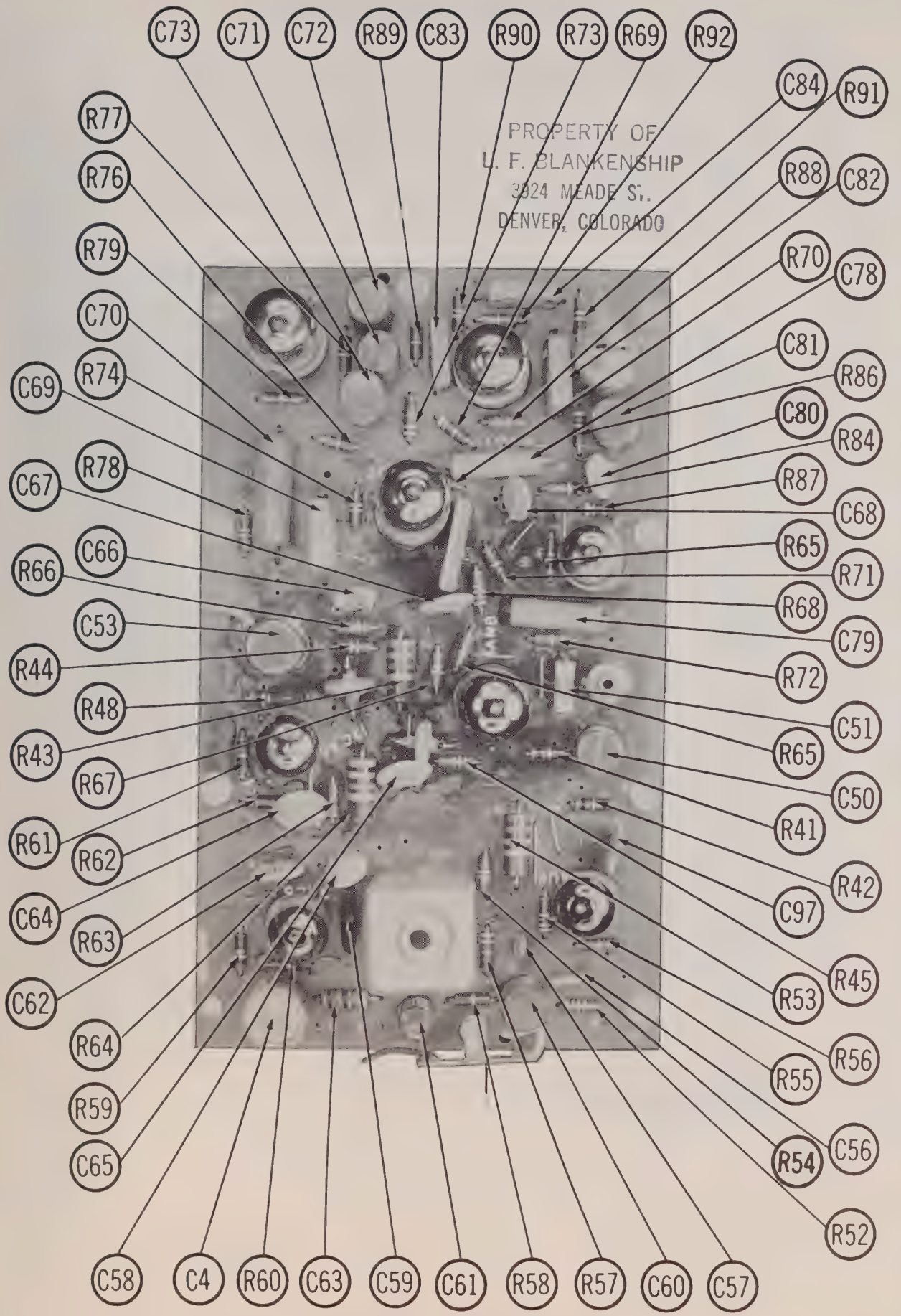

PRINTED BOARD

SET 389 FOLDER 1

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.

VIDEO IF ALIGNMENT

Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough generator output to provide a usable indication on VTVM.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over mixer-osc. tube (V3). Low side to chassis.	47.25MC (Unmod)	Any non-interfering channel	DC probe thru 10K to point (A). Common to chassis.	A1	Adjust for MINIMUM deflection.
2.	"	"	45.3MC	"	"	A2, A3	Adjust for maximum deflection.
3.	"	"	43.3MC	"	"	A4, A5	"
4.	"	"	45.3MC	"	"	A6	"

OVERALL VIDEO IF ALIGNMENT

Connect bias as under "Video IF Alignment".
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	Direct	High side to ungrounded tube shield floating over mixer-osc. tube (V3). Low side to chassis.	44MC (10MC Swp)	42.0MC 45.75MC 47.25MC	Any non-interfering channel	Vert. Amp. thru 10K to point (A). Low side to chassis.		Check for response similar to Fig. 1 with markers as shown. If necessary, retouch A1 thru A6 for desired results.

SOUND IF ALIGNMENT

Set the contrast control fully counter clockwise.
Use only enough generator output to provide a usable indication on VTVM.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6.	.01mfd	High side to pin 8 (plate) of 5AM8 (V6). Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	DC probe to point (B). Common to chassis.	A7, A8	Adjust for maximum deflection.
7.	"	"	"	"	DC probe to point (C). Common to chassis.	A9	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

4.5MC TRAP ALIGNMENT

Tune in a TV station and adjust A10 for MINIMUM 4.5MC beat interference in the picture.

VHF OSCILLATOR ALIGNMENT

Turn the set on and allow 15 to 20 minutes warm-up period.
Set channel selector to the lowest channel operating in the area.
Set the fine tuning to the center of its range.
Set other controls for normal picture and sound.
Using a 1/8" non-metallic alignment tool, carefully adjust the oscillator slug for best picture and sound. (NOTE: this is not necessarily the point of loudest sound). If two slugs are visible at the front of the tuner, adjust them in order of the channel number from the lowest to the highest.

RF AND MIXER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

UHF TUNER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

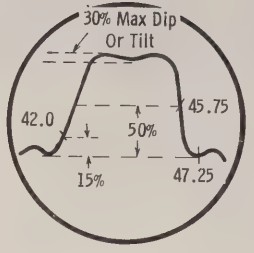

FIG.1

CHASSIS TOP VIEW

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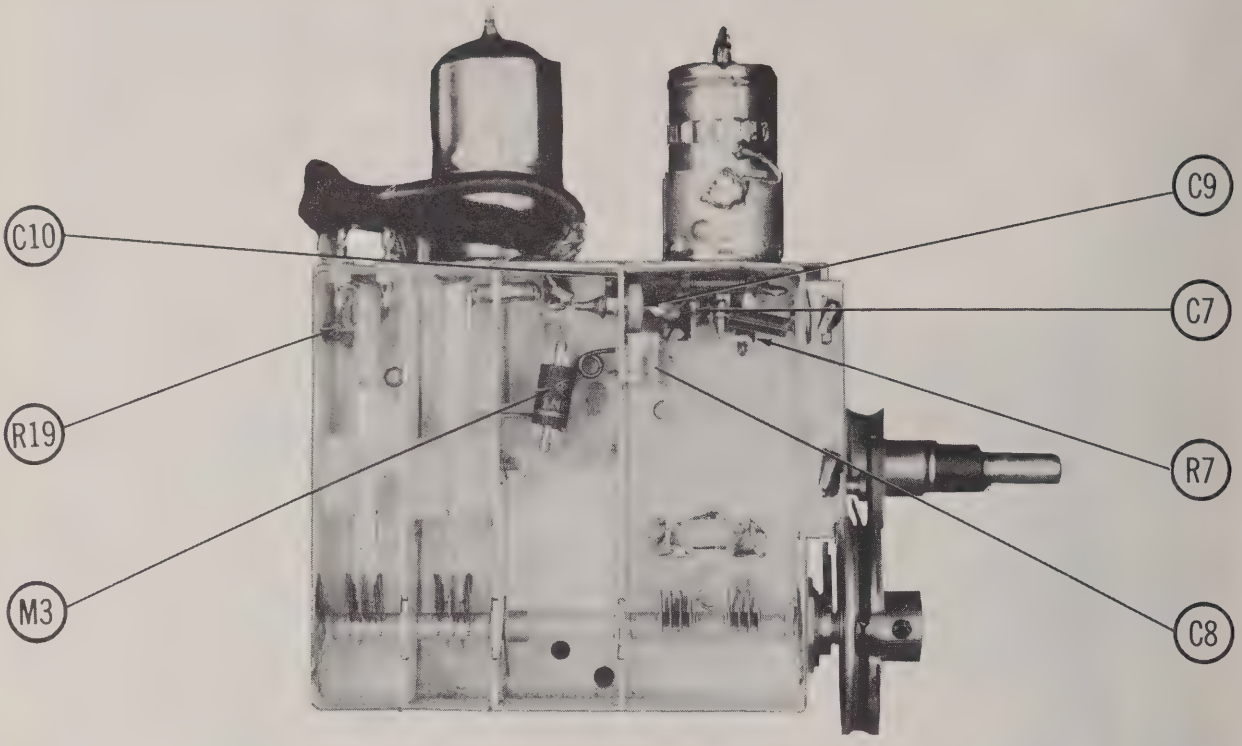
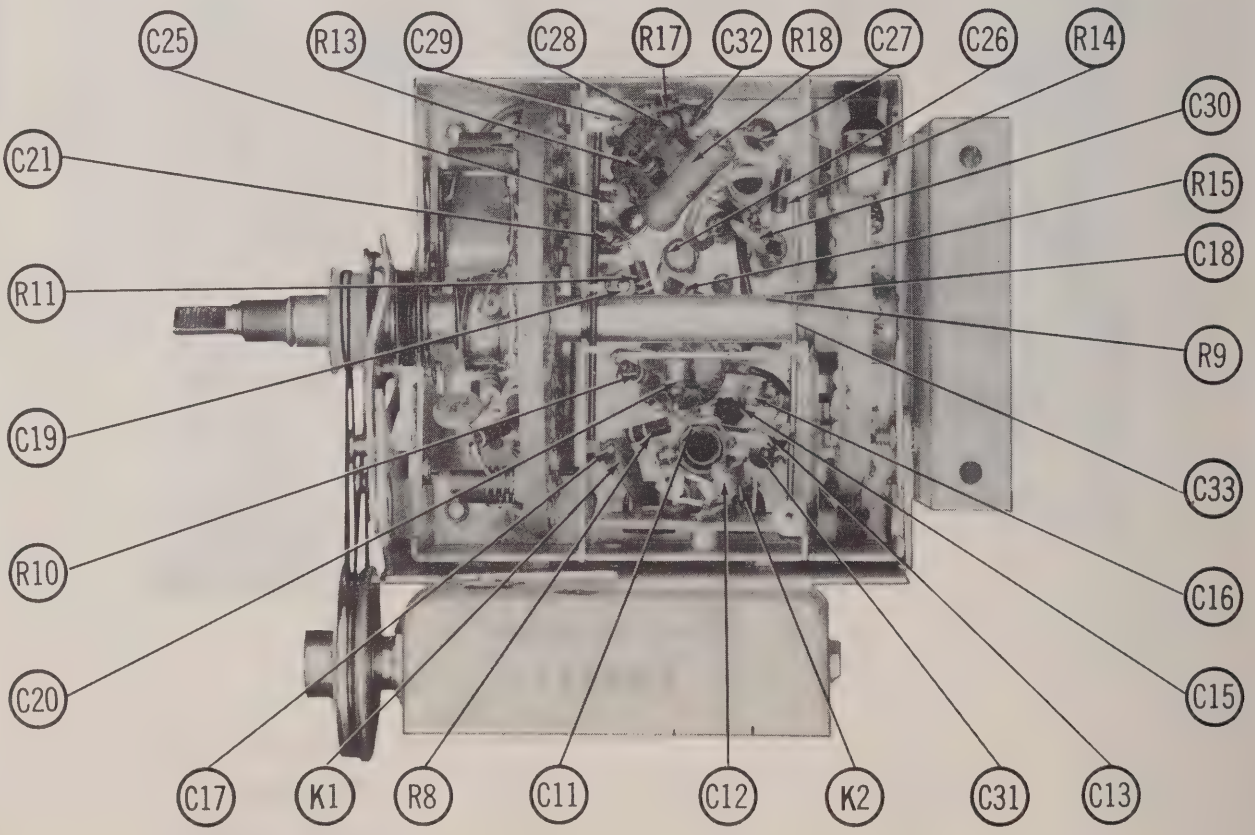


RF TUNER - SIDE VIEW

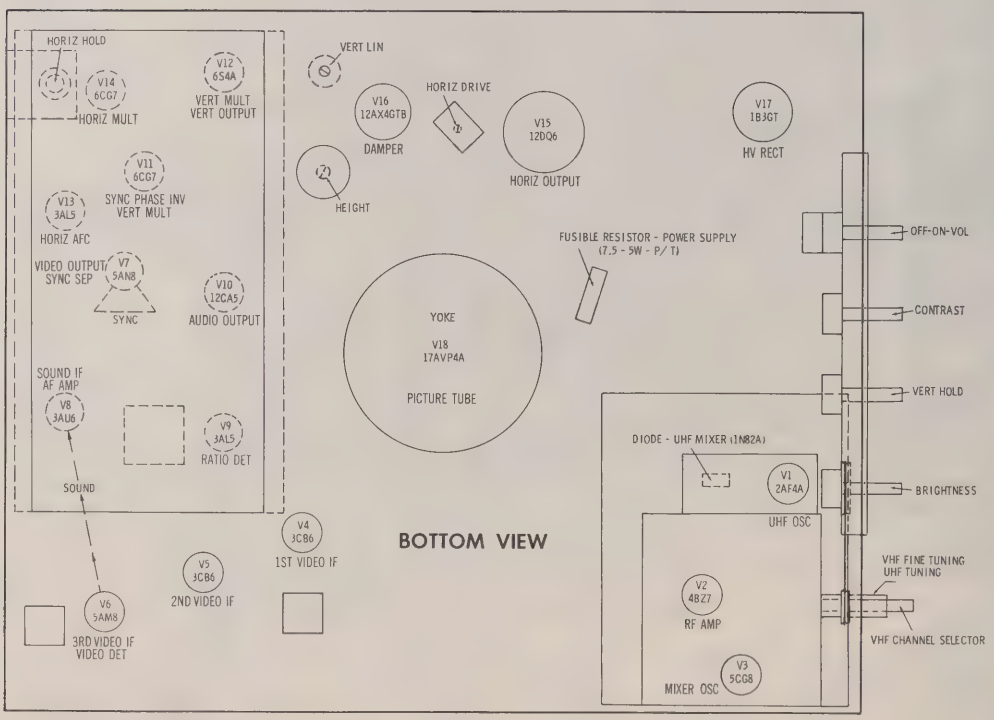


RF TUNER - BOTTOM VIEW

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	2AF4A	† *9700Ω	8200Ω	15Ω	16Ω	.1Ω	8200Ω	† *9700Ω		
V2	4BZ7	† 1500Ω	320K	INF	13.5Ω	15Ω	INF	380K	0Ω	0Ω
V3	5CG8	10K	▲ 10K	0Ω	13.5Ω	12Ω	▲ 1500Ω	▲ 470Ω	0Ω	1.5meg
V4	3CB6	570K	68Ω	12Ω	11Ω	† 5000Ω	† 5000Ω	0Ω		
V5	3CB6	470K	68Ω	11Ω	10Ω	† 5000Ω	† 5000Ω	0Ω		
V6	5AM8	120Ω	.1Ω	▲ 8200Ω	10Ω	9Ω	▲ 1000Ω	.1Ω	3900Ω	0Ω
V7	5AN8	† 50K	2.2meg	0Ω	17Ω	16Ω	† 6800Ω	▲ 18K	1meg	• 400Ω
V8	3AU6	85K	0Ω	2.5Ω	3.5Ω	† 27K	▲ 330Ω	270Ω		
V9	3AL5	INF	INF	3.5Ω	4.5Ω	10K	0Ω	10K		
V10	12CA5	¶	800K	9Ω	7Ω	800K	† 330Ω	† 570Ω		
V11	6CG7	• ‡3.2meg	220K	• 110K	18.5Ω	17Ω	† 10K	1.5meg	3000Ω	0Ω
V12	6S4A	TP	• 1500Ω	1.5meg	20Ω	18.5Ω	1.5meg	NC	NC	‡5800Ω
V13	3AL5	22Ω	22Ω	1.5Ω	2.5Ω	4.8meg	0Ω	4.8meg		
V14	6CG7	† 5600Ω	5.2meg	1500Ω	1.5Ω	0Ω	† 82K	150K	1500Ω	0Ω
V15	12DQ6	TP	20Ω	TP	† 10K	470K	NC	23Ω	0Ω	TOP CAP ‡25Ω
V16	12AX4GTA	NC	TP	¶	NC	† 0Ω	TP	26Ω	23Ω	
V17	1B3GT		PINS	1 THRU 8	HAVE	INFINITE	RESISTANCE			TOP CAP ‡510Ω
V18	17AVP4A	7Ω	39K	PIN 6 39K	PIN 10 ‡4700Ω	PIN 11 • 140K	PIN 12 4.5Ω			

¶ THIS READING CAN VARY GREATLY, (10K MINIMUM), DUE TO THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM 255V SOURCE.
‡ MEASURED FROM PIN 3 OF V16.
▲ MEASURED FROM 140V SOURCE.
NC NO CONNECTION
TP TIE POINT
* MEASURED IN "UHF" POSTION



TUBE PLACEMENT CHART

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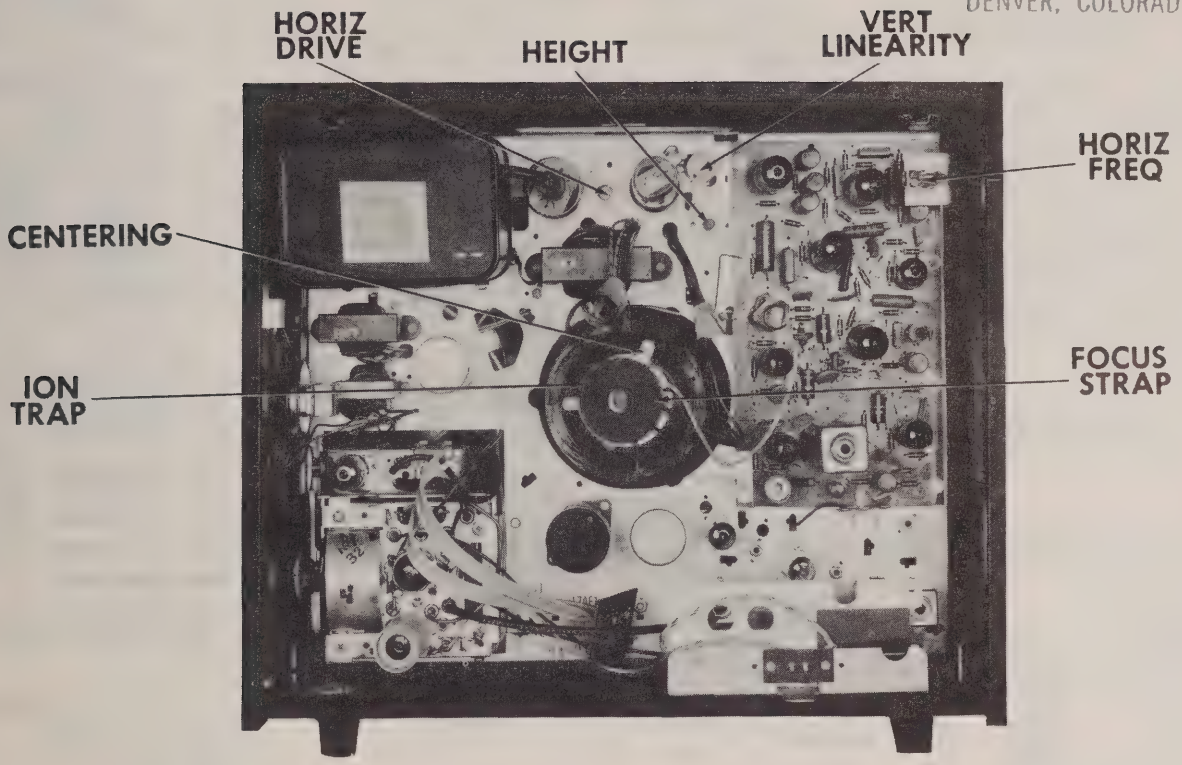
3924 MEADE ST.
DENVER, COLORADO



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern.

Adjust the horizontal hold until the picture remains in sync when switching from one channel to another.

Turn horizontal drive trimmer (B1) clockwise until just snug. If drive lines show in the picture, turn B1 counter clockwise until drive lines disappear.

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	UHF Oscillator	2AF4A	
V2	HF Amplifier	6BZ7	
V3	Mixer-Osc	5CG8	
V4	1st Video IF Amp	5CB6	
V5	2nd Video IF Amp	5CB6	
V6	3rd Video IF Amp - Video Detector	5AM8	
V7	Video Output-Sync Sep	5AN8	
V8	Sound IF Amp -AF Amp	5AU8	
V9	Ratio Det	3AL5	
V10	Audio Output	12CA5	
V11	Sync Phase Inv -Vert Mult.	6CG7	
V12	Vert Mult -Vert Output	6S4A	
V13	Horiz AFC	3AL5	
V14	Horiz Mult.	6CG7	
V15	Horiz Output	12DQ6	
V16	Damper	12AX6GTA	
V17	HV Rectifier	1B3GT	

PICTURE TUBE

ITEM No	REPLACEMENT DATA: ADMIRAL PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	NOTES
V18	17AVP4A	17ATP4A, 17ATP4A ①	17AVP4A, 17ATP4A ②, 17AVP4	① Aluminized ② Silver screen "88"

ELECTROLYTIC CAPACITORS

ITEM No	RATING: CAP	VOLT	REPLACEMENT DATA: ADMIRAL PART No	AEROVOX PART No.	CORNELL DUBILIER PART No	MALLORY PART No	PYRAMID PART No	SANGAMO PART No	SPRAGUE PART No.
C1	150	150	67D15-199	AFH1-31-75	XA0315	FP151	TM5-34	S-105	TVL-1430
C2	100	200	67D15-119	AFH31-36-05	A0240	FP150	TM3-61	S-190	TVL-1750
C3A	40	150	67D15-117	AFH4-U4-90	D0929	FP431, 4 TC98	TMQ-127	C-537 MTD-4530	TVL-4859.5
B	40	150							
C	60	200							
D	30	50							
C4	5	50	67B27-3	PRS150V4	BBR4-50	TC30	TC-4-50	MT-0504	TVA-1402
C5	40	300	67A4-2	PRS250V40	BR4025	TC98	TD-40-250	MT-2540	TVA-1511
C6	10	500	67A4-34	PRS500V10	BR1251	TC92	TD-10-500	MT-5010	TVA-1963

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP	VOLT	REPLACEMENT DATA: ADMIRAL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C7										
C8	1000			EF-001	MFT-1000				503C-D1	
C9	1000			EF-001	MFT-1000				503C-D1	
C10	1000			EF-001	MFT-1000				503C-D1	
C11	120		65D10-136							N500 10%
C12	22		65D10-134	N750-D1 22	TCN-22	C10G22U	TC7-22		5TCU-G22	N750 10%
C13	15		65D10-133	N750-D1 15	TCN-15	C10G15U	TC7-15		5TCU-G15	N750 10%
C14	800		65D10-20	BPD-0008	DD-801	L10T8	ED-0008		5GA-T8	
C15	8.2		65D10-131	NPO-D1 8.2						NPO 5%
C16	2.2		65S28-032	NPO-S1 2.2	TCZ-2R2	CTA6V2K	TCO-2.2		5TCCB-V22	
C17	1000		65B26-5	EF-001	MFT-1000				503C-D1	
C18	2.2		65D10-17				TC7-2.2			N750 10%
C19	5-3.0		66A36-3		839-3	31S-D		CT56SA		
C20	1000		65B26-5	EF-001	MFT-1000				503C-D1	
C21	1000		65B26-5	EF-001	MFT-1000				503C-D1	
C22	27		65D10-93		TCN-27	C10G27U	TC7-27			N750 10%
C23	1.5		65S28-015	NPO-S1 1.5	TCZ-1R5	CTA6V1K	TCO-1.5	ZT-5515	5TCCB-V15	
C24	1.5		65S28-015	NPO-S1 1.5	TCZ-1R5	CTA6V1C	TCO-1.5	ZT-5515	5TCCB-V15	
C25	47		65D10-73							N1400 5%
C26	5-3.0		66A36-4		839-3	31S-D		CT56SA		
C27	1000		65B26-5	EF-001	MFT-1000				503C-D1	
C28	1.0		65D10-129	NPO-S1 1.0	TCZ-1		TCO-1			
C29	10		65D10-139							N1500 5%
C30	1000		65D10-53	BPD-001	DD-102	BYA8DI	ED-1000	DC52I	5HK-DI	
C31	1000		65B26-5	EF-001	MFT-1000				503C-D1	
C32	1000		65D10-53	BPD-001	DD-103	BYA8DI	ED-1000	DC52I	5HK-DI	①
C33	1000		65B26-5	EF-001	MFT-1000				503C-D1	
C34	1000		65D10-53	BPD-001	DD-102				5HK-DI	
C35	1000			BPD-001	DD-102	BYA8DI	ED-1000	DC52I	5HK-DI	
C36	1000			BPD-001	DD-103	BYA8DI	ED-1000	DC52I	5HK-DI	
C37	2.2		65D26-86	NPO-S1 2.2	TCZ-2.2	C10V22C	TCO-2.2		5TCCB-V22	NPO 10%
C38	15		65D26-60		TCZ-15		TCO-15			NPO 5%
C39	1000			BPD-001	DD-102	BYA8DI	ED-1000	DC52I	5HK-DI	
C40	22	100		P388N-32		CUB2P23		GEM-3022	2TM-P23	
C41	10000		65B26-5	BPD-01	DD-103	BYA8SI	ED-01	DC51I	5HK-SI	③
C42	22	200		P388N-32		CUB2P23		GEM-3022	2TM-P23	
C43	1000			BPD-001	DD-102	BYA8DI	ED-1000	DC52I	5HK-DI	
C44	1000			BPD-003	DD-103	BYA8IA	ED-1000	DC52I	5HK-DI	
C45	5000			BPD-005	DD-502	BYA10D6	ED-005	DC52S	5HK-D5	
C46	5000			BPD-005	DD-502	BYA10D6	ED-005	DC52S	5HK-D6	③
C47	1000			BPD-001	DD-102	BYA8IX	ED-1000	DC52I	5HK-DI	
C48	6.8		65S28-068	NPO-S1 6.8	TCZ-6.8	CTA6V8K	TCO-6.8	ZT-5568	5TCCB-V68	
C49	6.8			NPO-S1 6.8	TCZ-6.8	CTA6V8C	TCO-6.8	ZT-5568	5TCCB-V68	
C50	1	200		P388N-1		BC2P1J		ACE401	2SE-P10	
C51	6.8		65D6-71	NPO-S1 6.8	TCZ-6.8	CTA6V8C	TCO-6.8	ZT-5568	5TCCB-V68	NPO 10%
C52	20000			BPD-02	DD-303	BYS8S2	SD-02	ACE4032	4SE-S32	
C53	22	400	64B16-38	P488N-22		BC8P22J		ACE4022	4SE-P22	
C54	10		65D6-55	NPO-D1 10	TCZ-10	C10G1C	TCO-10	ZT-546	5TCC-T1	NPO 10%
C55	20		65D6-51		TCZ-20		TCO-20			NPO 5%
C56	4700			BPD-0047	DD-473	BYA10D47	ED-0047	DC-5347	5HK-D47	
C57	1000			BPD-001	DD-102	BYA8DI	ED-1000	DC52I	5HK-DI	
C58	4700			BPD-0047	DD-473	BYA10D47	ED-0047	DC-5347	5HK-D47	
C59	180		65D6-69				CY10C181K		M5-S33	N930 5%
C60	.047	200		P388N-047		BC3S47J		ACE547	3SE-S47	
C61	.001	600		P488N-001		BC5D1J	GP-1000	ACE52	4SE-D10	
C62	10000			BPD-02	DD-103	BYA8SI	SD-01	DC51I	5HK-SI	
C63	500			SI 500	D6-501	LY8TS	GP-500	UC-535	5GA-T5	
C64	10000			BPD-01	DD-103	BYA8SI	ED-01	DC51I	5HK-SI	
C65	10000			BPD-01	DD-103	BYA8SI	SD-01	DC51I	5HK-SI	
C66	150		65D6-85	N750-D1 150	TCN-150	C10T15U	TC7-150		5TCU-T15	N750
C67	10000			BPD-01	DD-103	BYA8SI	ED-01	DC51I	5HK-SI	
C68	4700			BPD-0047	DD-473	BYA10D47	ED-0047	UC-5347	5HK-D47	
C69	2200			1686-0022		1N5D23	CY20C222K		M5-S22	10%
C70	.047	300	65C34-69							10%
C71	.033	600	65B45-10							10%
C72	.047	400	64B15-23	P488N-047		BC8S47J		ACE547	4SE-S47	
C73	.047	600	64B16-9	P488N-047		BC8S47J		ACE547	4SE-S47	
C74	10000			BPD-01	DD-103	BYA8SI	ED-01	DC51I	5HK-SI	
C75	.01	1600	64B32-38							10%
C76	.033	600		P488N-033	DD-369	CUB4S33	ED-03	GEM-4133	4TM-S33	

PARTS LIST AND DESCRIPTIONS

CAPACITORS (cont)

ITEM No.	RATING: CAP	VOLT	REPLACEMENT DATA: ADMIRAL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C77	.047	200		P288N-047	DF-503	CUB2S47		GEM-4147	2TM-S47	
C78	.001	400								10%
C79	.001	600								10%
C80	4700			BPD-0047	DD-473	BYA10D47	ED-0047	UC-5347	5HK-D47	
C81	.047	300	64B18-35	P288N-047		BC3S47J		ACE547	3SE-S47	
C82	3900		65B21-392	1464-0038		1R5D39	CY30C392K	ACE5147	3SE-S47	10%
C83	390		65B21-391		D6-391	1R5T39	ED-390		M5-339	10%
C84	330		65B21-331	1469-00033	D6-331	1R5T33	ED-330		M5-338	10%
C85	.0047	600		P688N-0047	D6-472	CUB6D47	GP-4700		M5-333	
C86	178- 780		66A30-3							
C87	.047	400		P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C88	.1	600		P688N-1	DF-104	CUB5P1		GEM-4161	5TM-P1	N1500 5% N1800 5%
C89	330	1000	65D10-89							
C90	150	1000	65D10-88							
C91	.047	1000		P10S8N-047		CUB10S47		GEM-10147	10TM-S47	
C92	.047	300		P288N-047	DF-503	CUB2S47		GEM-4147	2TM-S47	
C93	.047	600		P688N-047	DF-503	CUB6S47		GEM-4147	5TM-S47	
C94	5000			BPD-005	DD-502	BYA10D6	ED-005	DC52S	5HK-D5	
C95	5000			BPD-005	DD-502	BYA10D6	ED-005	DC52S	5HK-D5	
C96	5000			BPD-005	DD-502	BYA10D5	ED-005	DC52S	5HK-D5	
C97	5000			BPD-005	DD-502	BYA10D6	ED-005	DC52S	5HK-D5	
C98	1000	1400		DAC-37		BYS18S1		GEM-1811	BL-S10	

① Some versions use an 800mmf 500 disc (Part #65D20-20) in this application.
② Not used in some versions
③ Some versions use an 10000mmf in this application.

CONTROLS

ITEM No	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: ADMIRAL PART No	CENTRALAB PART No	CLAROSTAT PART No	IRC PART No	MALLORY PART No	INSTALLATION NOTES
R1A	1meg	½	75C2-23	B-76	A47-1meg-2	Q3-129	U55	Volume - Note 1
B	Shaft			Not Req.	K28-3	Not Req.	U8-38	
C	Switch			K8-1	SWE-13	T6-1	U8-36	
R2	3000Ω	½	75C13-53	B-705		Q3T-113	U9	Contrast - Note 2
R3A	200K	½	75D20-39	B-46	A47-200K-8	Q3-129	U43	Vert. Hold
B	Shaft			Not Req.	K28-3	Not Req.	Not Req.	
R4A	100K	½	75D20-35	B-40	A47-100K-8	Q3-135	T41B1	Brightness
B	Shaft			Not Req.	K28-3	Not Req.	Not Req.	
R5A	3.5meg	½	75D20-96	BX-54	A47-3meg-8	Q3-140	U39	Height
B	Shaft			Not Req.	FK8-1/2	Not Req.	Not Req.	
R6	4000Ω	2(WW)	75B27-3		39-4000-1000			Vert. Lin. with 820Ω stop

Note 1. Alternate part #75D3-23 may be used in some versions.
Note 2. Alternate part #75D13-53 may be used in some versions.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING: OHMS	WATT	ADMIRAL PART No.	NOTES
R7	8200Ω			
R8	3900Ω			Note 1
R9	330Ω			
R10	820K			
R11	680K			
R12	27Ω			Note 2
R13	10K			
R14	1000Ω			
R15	10K			
R16	1meg			
R17	10K			
R18	82000Ω	3		Note 3
R19	680K			
R20	470Ω			
R21	270K	1		
R22	1.5meg			
R23	100K			
R24	1.5meg			
R25	270K	1		Note 4
R26	470K			
R27	39K			
R28	100K			
R29	33000	5%		
R30	1000Ω			
R31	4000Ω	7		
R32	68Ω			
R33	1000Ω			
R34	16K	5%		
R35	910Ω	5%		Note 5
R36	68Ω			
R37	910Ω	5%		
R38	8200Ω			
R39	120Ω			
R40	3900Ω			
R41	100Ω			
R42	1meg			
R43	6800Ω	2		
R44	15K			
R45	15K			
R46	1500	5%		
R47	47Ω			
R48	120K			
R49	39K			
R50	68K			
R51	39K			
R52	47K			
R53	27K	2		
R54	22K			
R55	330Ω			

ITEM No.	RATING: OHMS	WATT	ADMIRAL PART No.	NOTES
R56	270Ω			
R57	390Ω			
R58	2200Ω			
R59	10K			
R60	56K			
R61	150Ω			
R62	2meg	5%	66-B7-305	
R63	1.8meg	5%	66-B7-185	
R64	330Ω	2		
R65	2.2meg			
R66	270K			
R67	330K			
R68	47K			
R69	4.7meg			
R70	2.2meg			
R71	6800Ω			
R72	3300Ω			
R73	3300Ω			
R74	330K			
R75	100Ω			
R76	1.8meg			
R77	15K			
R78	56K			
R79	1.8meg			
R80	220K			
R81	560Ω			
R83	560Ω			
R83	100K	5%		
R84	100K	5%		
R85	33Ω	1		
R86	470K			
R87	4.7meg			
R88	5600Ω			
R89	1500Ω			
R90	150K			
R91	82K			
R92	5600Ω			
R93	100Ω			
R94	470K			
R95	100Ω			
R96	10K	2		
R97	4700Ω	2		
R98	2200Ω			
R99	4.7Ω			
R100	1000Ω	2		
R101	7.5Ω	5	61A19-3	
R102	39Ω	20	61B3-20	
R103	470K			

Note 1. Some versions may use 15K in this application.
Note 2. Some versions may use 15Ω in this application.
Note 3. Some versions may use 180Ω in this application.
Note 4. Not used in some versions.
Note 5. Some versions may use 1000Ω in this application.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: ADMIRAL PART No.	Halldorson PART No.	Merit PART No.	Rem PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	Vert. Output	79B43-4	Z1607 ①	A-2819	V312	A-8141	26S54	A-U9X	
T2A	Yoke-Horiz. (8.5MH)	67D67-18	PD807	MDF-92	YB0F10/43	DY-16A	Y-16	Y-4L6	
B	(900)-Vert. (2.9MH)	③	¾ ④	¾ ④	¾ ④	¾ ④	¾ ④	NW2 ③	
M6	Rear Cover & Centering Device	94B12-1							
	Yoke Clamp	19A112-3							
T3	Horiz. Output	79D74-1		HVO-135	HO-254 ⑤ *	FLY-107 ⑤ *			

① Cut and tape blanking lead.
② Includes resistors R81 and R82.
③ Use original rear cover and centering device. Mount with leads out of top and connect same as original.
④ Use original horizontal damping network, if necessary
⑤ Trim terminal board to duplicate original and use original mounting brackets.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	Rem Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
4				3	3	
2				5	6	
1				4	1	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	SEC.	REPLACEMENT DATA: ADMIRAL PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T4	33000	3-4Ω	79D33-16	Z1106 ①	A-3025	A-3328	34S48	S-12X	① Drill new mounting hole.

SPEAKER

ITEM No.	TYPE: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: ADMIRAL PART No.	QUAM	NOTES
SP1	4"	PM	3-4Ω	78B102-3	4A07	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: ADMIRAL PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Rem PART No.	NOTES
L1	1st Video IF	72D19-1					Includes caps - Note 1
L2	2nd Video IF	72D11-39	17-4522	TV-130	6219	VF-3	
L3	47.25MC Trap	72D11-33					
L4	3rd. Video IF	72D11-35	17-4523	TV-130	6219	VF-3	
L5	4th. Video IF	72D143-3					
L6	Resonant Choke	72B34-9					T7, 5MC, 2.4 Microhenries
L7	RF Choke	72B34-1					7.7 Microhenries
L8	Series Peaking Coil	75A5-23	19-3150 *	TV-184*	6180 *	VP-5 *	186 Microhenries-wound on 4700Ω resistor
L9	Shunt Peaking Coil	72B5-34					879 Microhenries
L10	4.5MC Trap	72A132-7					
L11	Series Peaking Coil	72B5-23	19-3300 ▲	TV-198 ▲	6130 ▲		278 Microhenries-wound on 33K resistor
L12	Shunt Peaking Coil	72B5-31	19-6400 +	TV-201 +	6134 +	VP-7 +	370 Microhenries-wound on 10K resistor
L13	Sound IF	72D19-14	30-4005 ◆				
L14	Ratio Det.	72C26-4					
L15	Line Choke	73B31-1	19-1005	BC-566	4622		12 Microhenries
L16	Fil. Choke	73A2-5	19-3001	BC-580	6175	VP-9	.6 Microhenry
L17	Fil. Choke	73A2-5	19-3001	BC-580	6175	VP-9	.6 Microhenry
L18	Fil. Choke	73A2-5	19-3001	BC-580	6175	VP-9	.5 Microhenry

Note 1. Alternate part #72D19-2.
* Parallel with 47000 resistor.
▲ Parallel with 33K resistor.
+ Parallel with 10K resistor.
◆ Remove 10mmf cap.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.: PRI	SEC	REPLACEMENT DATA: ADMIRAL PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Rem PART No.	Thordarson PART No.	NOTES
L19	450		94C17-4		TV-164				

FILTER CHOKE

ITEM No.	RATINGS: TOTAL DIRECT CURRENT	D C RESISTANCE	INDUCTANCE (@ CURRENT 100MA)	REPLACEMENT DATA: ADMIRAL PART No	Halldorson PART No	Merit PART No	Stancor PART No	Thordarson PART No	Triad PART No
L20	250A	93Ω	1.3 Hy.	74B18-15	C5037 ①	C-2996 ①	C-2326 ①	28C44 ①	C-24X

① Drill new mounting hole.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	ADMIRAL PART No.	REPLACEMENT DATA
K1	Antenna Isolation	470mmf, .2-1meg	63A11-1	Centralab RC-471 Sprague R-S17
K2	Antenna Isolation	470mmf, .2-1meg	63A11-1	Centralab RC-471 Sprague R-S17
K3	Vert. Integrator	2000mmf, 5000mmf, 5000mmf, 22K, 82000, 8200Ω	63C9-7	Aerovox PA-100 Centralab PC-104 Cornell-Dubilier 1L5TMI Erie 1406-01 Sprague V-1

ADMIRAL MODELS TA18A11, TA18A12, TA18A13 (Ch. 17AF1)

FOLDER 1

PARTS LIST AND DESCRIPTIONS (Continued)

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	ADMIRAL PART No.	FEDERAL PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1	.220A	93A4-2 ①	1090A ①	1N1007 ②	RS300SL ①	300 ① M500 ③	① Selenium type. ② Germanium type.
M2	.220A	93A4-2 ①	1090A ①	1N1007 ②	RS300SL ①	300 ① M500 ③	③ Silicon type.

CRYSTAL DIODES

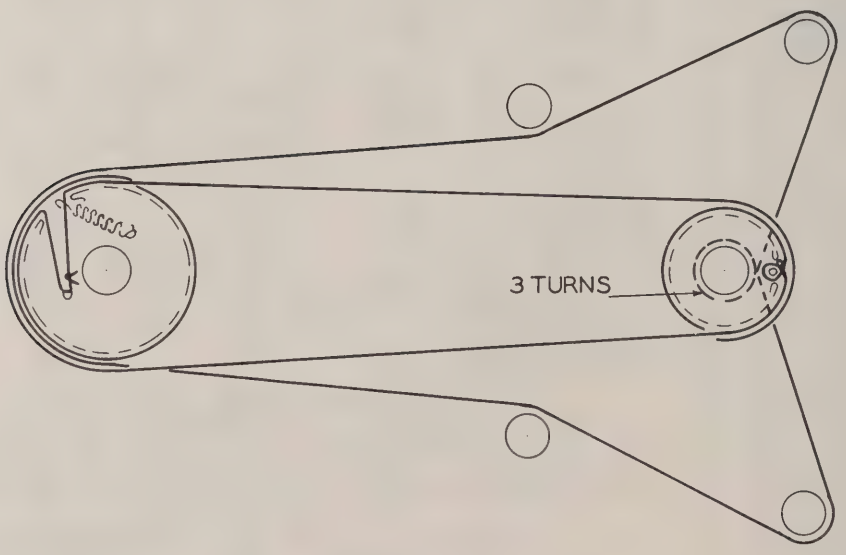
ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		ADMIRAL PART No.	CBS PART No.	SYLVANIA PART No.	
M3	1N82A		1N82A	1N82A	UHF Mixer (Clip-in)

MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M4	Tuner	94E144-21	VHF
M5	Tuner	94D112-5	UHF
	Tuner	94D112-6	UHF
M6	Centering Device	94B121-1	Includes yoke cover
M7	Ion Trap	94A15-4	

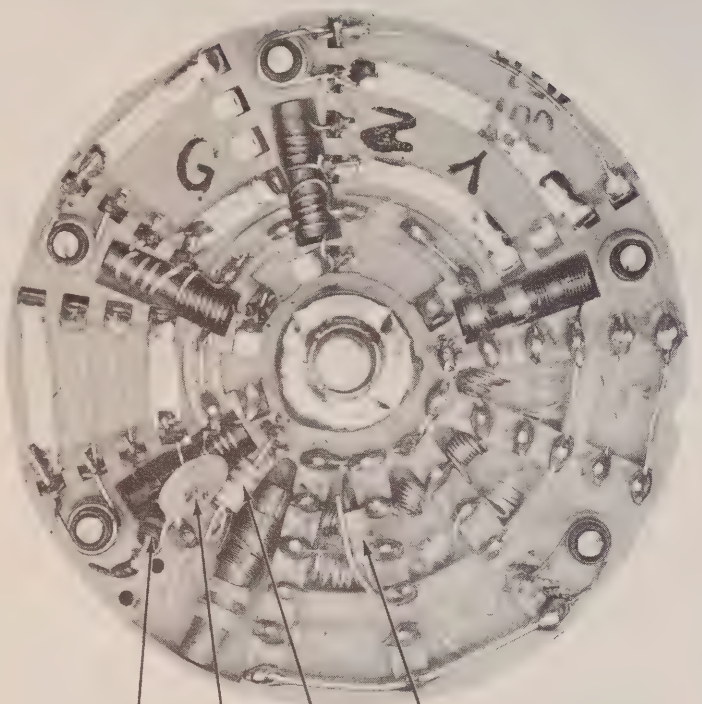
WIRING DATA

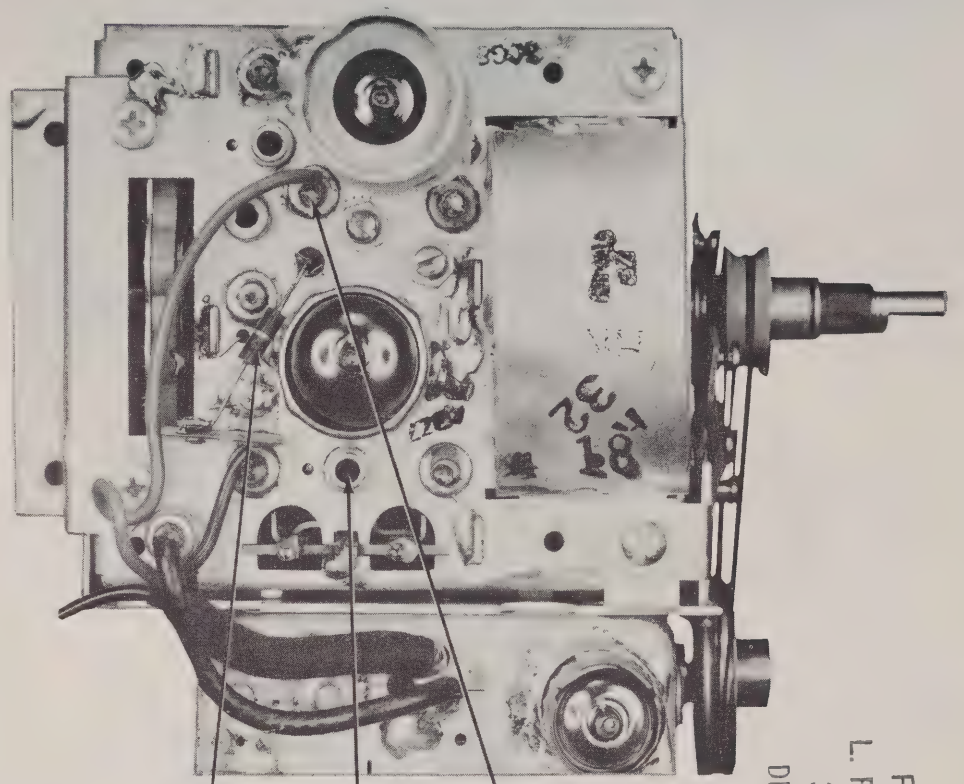
High Voltage Lead	Use BELDEN No.	8869
Shielded Hook-up Wire	Use BELDEN No.	8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No.	8874
300Ω Tuner Input Lead	Use BELDEN No.	8225
300Ω Antenna Lead-in	Use BELDEN No.	8230 or 8275
Antenna Rotor Cable	Use BELDEN No.	8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor



TURNED CLOCKWISE

DRIVE CORD STRINGING





R12 C22 C23 C24 R16 A2 C34

RF TUNER-TOP VIEW

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3924 MEADE St.
DENVER, COLORADO

MAGNAVOX CHASSIS U23-01AA, U23-02AA, U23-03AA, V23-01AA, V23-02AA, V23-03AA, AMP-135BB

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 9 push-on type knobs from the front.
2. Remove 9 wood screws holding the rear cover. Remove the rear cover.
3. Remove 4 hex nuts holding the tuner and control panel.
4. Remove speaker leads and the amplifier input plug.
5. Remove 4 hex nuts holding the amplifier.
6. Remove the amplifier.
7. Remove 5 bolts holding the chassis board.
8. Remove the chassis.

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DENVER, COLORADO

MAGNAVOX CHASSIS U23-01AA, U23-02AA, U23-03AA, V23-01AA, V23-02AA, V23-03AA, AMP-135BB

TRADE NAME	Magnavox Chassis U23A-01AA, U23-02AA, U23-03AA, V23-01AA, V23-02AA, V23-03AA (23 Series), AMP-135BB
MANUFACTURER	Magnavox Co.., 2131 Bueter Road, Ft. Wayne 4, Indiana
TYPE SET	Television Receiver
TUBES	Television - Twenty Amplifier - Four
POWER SUPPLY	110-120 Volts AC, 60 Cycle RATING 245 Watts, 2.2 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF oscillator is possible by removing the channel selector and fine tuning knobs.

PICTURE TUBE SAFETY GLASS CLEANING

Remove 6 wood screws from the top trim. Remove the trim, tilt the top of the glass out and lift up to remove.

FOCUS

The focus may be varied in steps by the position of a plug in the focus adjustment board. Readjust the ion trap for the best focus consistent with maximum brightness.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

For adjustment of the horizontal oscillator, it is necessary to remove the rear cover and supply power to set. Set the horizontal hold at the center of its range and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally. (For location, see tube placement chart).

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the discriminator secondary (A13) located on top of chassis.

FUSES

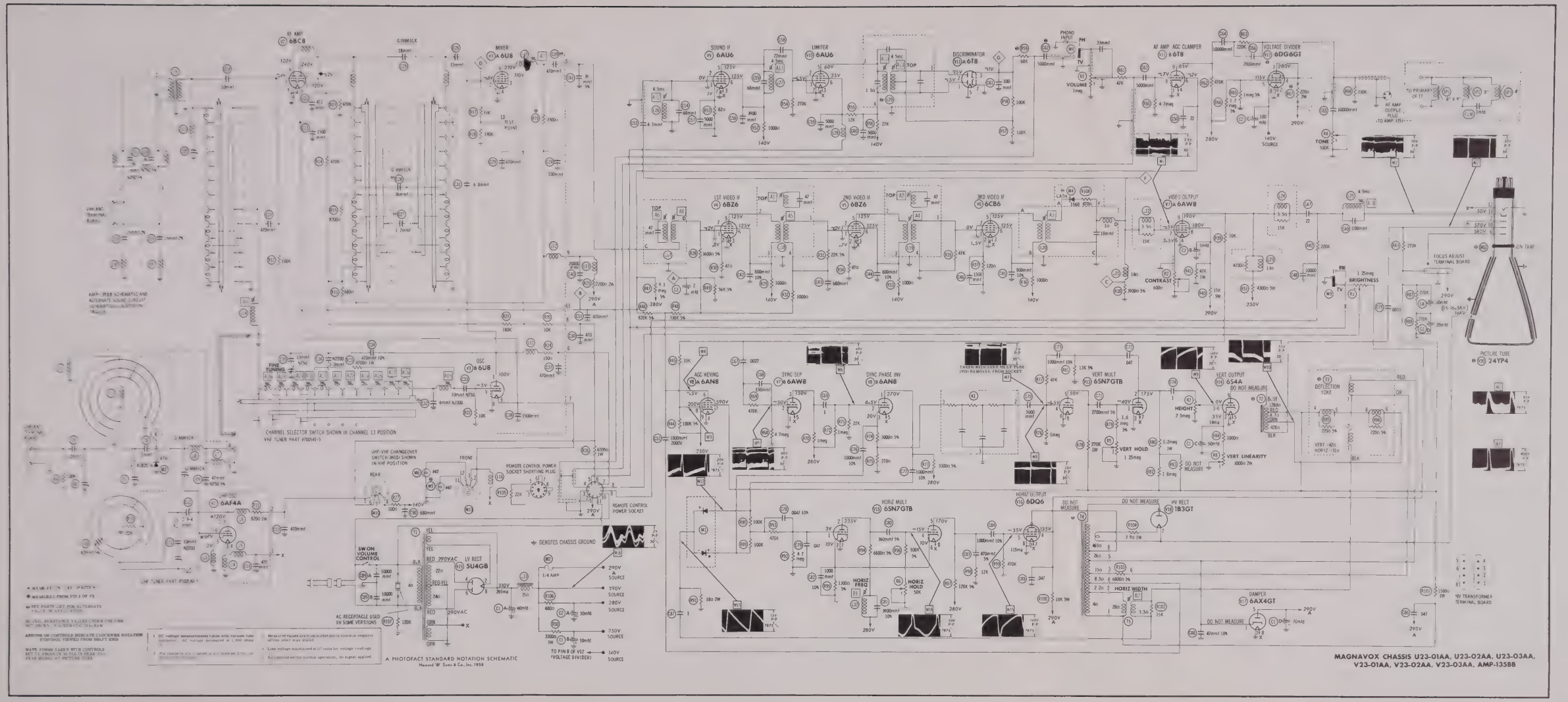
One fuse is used for horizontal sweep circuit and tuner protection. (For location, see tube placement chart).

CENTERING

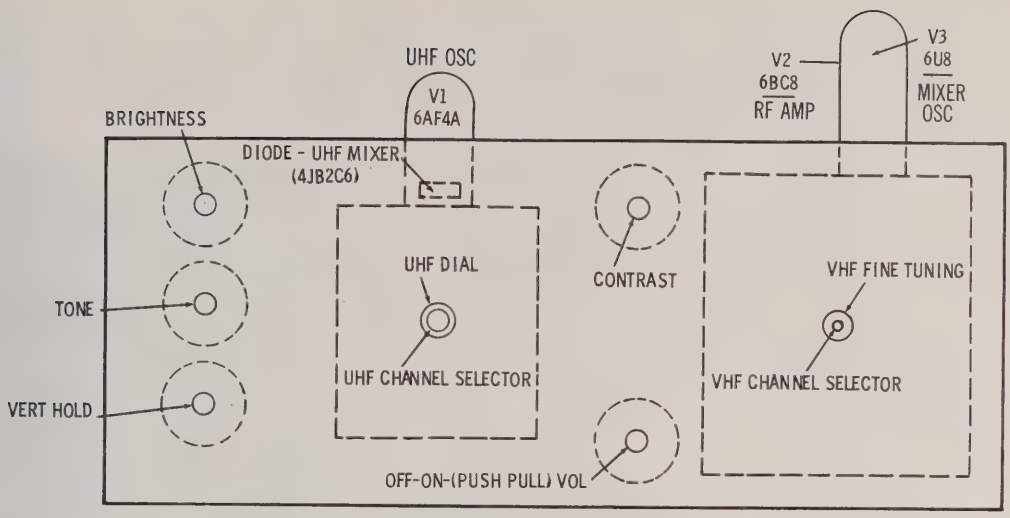
Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

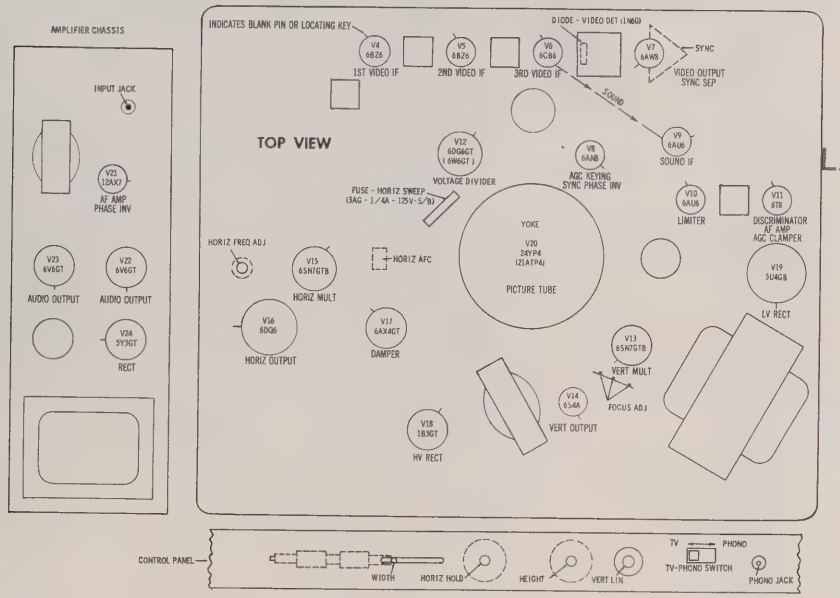
HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1958 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana . Printed in U.S. of America


RF AMP 6BC8
MIXER 6AU8
OSC 6U8
UHF OSC 6AF4A
SOUND IF 6AU6
LIMITER 6AU6
DISCRIMINATOR 6T8
AF AMP AGC CLAMPER 6T8
VOLTAGE DIVIDER 6DG6GT
1ST VIDEO IF 6BZ6
2ND VIDEO IF 6BZ6
3RD VIDEO IF 6CB6
VIDEO OUTPUT 6AW8
AGC KEYING 6AN8
SYNC SEP 6AW8
SYNC PHASE INV 6AN8
VERT MULT 6SN7GTB
VERT OUTPUT 6S4A
HORIZ MULT 6SN7GTB
HORIZ D. TP,T 6DQ6
HV RECT 1B3GT
DAMPER 6AX4GT
PICTURE TUBE 24YP4
VOLUME
CONTRAST
BRIGHTNESS
TONE
HEIGHT
VERT HOLD
VERT LINEARITY
HORIZ FREQ
HORIZ HOLD
HORIZ WIDTH
FINE TUNING
SW ON VOLUME CONTROL
LV RECT 5U4GB
AC RECEPTACLE USED IN SOME VERSIONS
REMOTE CONTROL POWER SOCKET
CHANNEL SELECTOR SWITCH SHOWN IN CHANNEL 13 POSITION
VHF TUNER PART #700541-5
UHF TUNER PART 4700X-1
DENOTES CHASSIS GROUND
A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958
MAGNAVOX CHASSIS U23-01AA, U23-02AA, U23-03AA, V23-01AA, V23-02AA, V23-03AA, AMP-1358B

TUBE PLACEMENT CHART





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TUBE FAILURE CHECK CHART

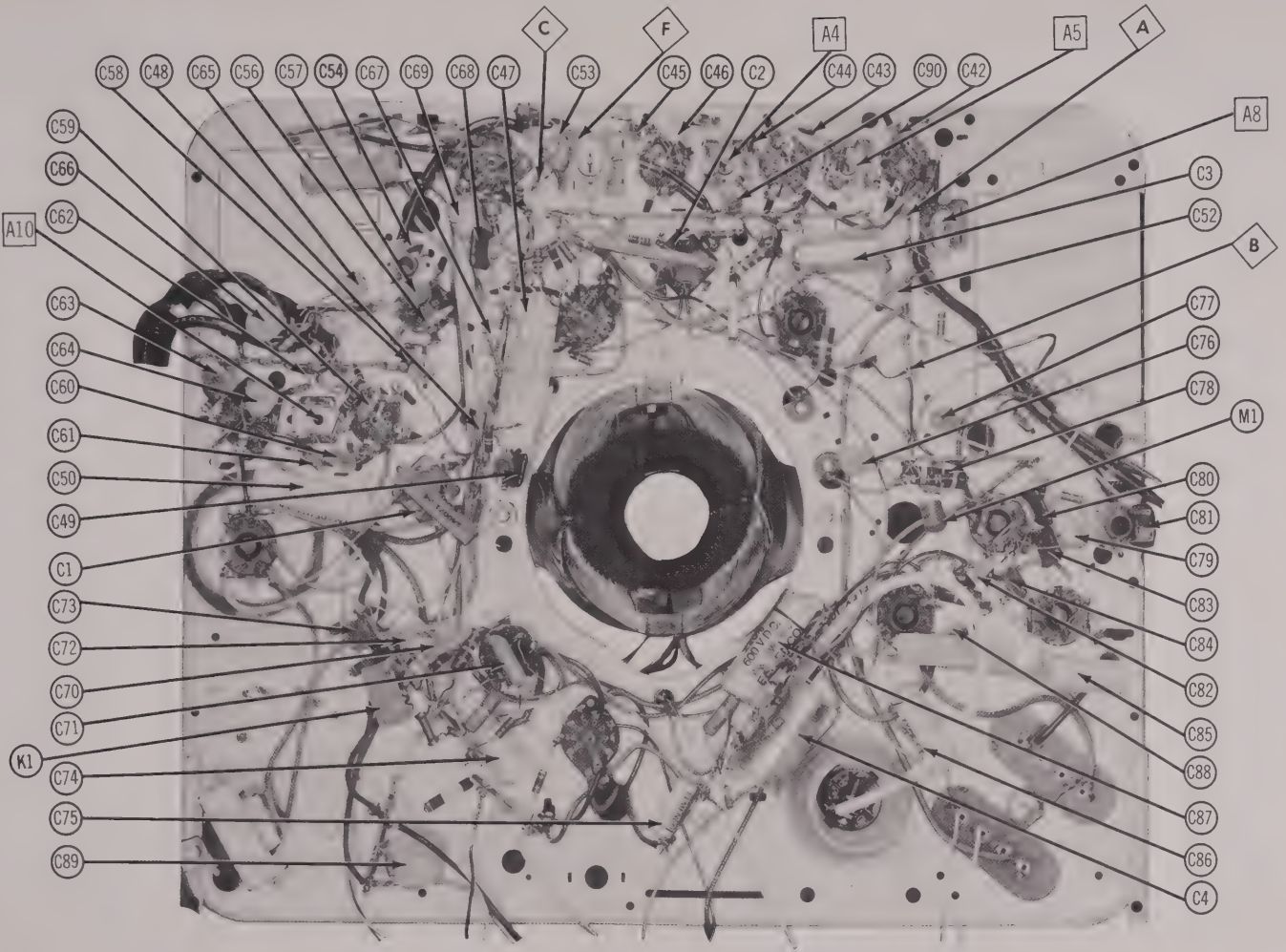
The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - **V19, V24**

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V4, V5, V6, Diode (M4), V12**
No pic, no sound, has snow - **V2, V3, V4, V12, (V1 UHF only)**
No pic, has sound, has raster - **V7, V20**
Has pic, no sound - **V9, V10, V11, V12, V21, V22, V23**
Overloaded picture - **V8, V11**

SYNC FAILURE
No vert. sync - **V7, V8**
No horiz. sync - **V7, V8, Rectifier (M1)**
No vert. or horiz. sync - **V7, V8**

SWEEP FAILURE
No raster, has sound - **M2, M1, V15, V16, V17, V18, V20**
No vertical deflection - **V13, V14**
Poor vert. linearity or foldover - **V13, V14**
Poor horiz. linearity or foldover - **V15, V16, V17**
Narrow picture - **V15, V16, V17, V19**
Vert. off freq. - **V13**
Horiz. off freq. - **V15**



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt bias supply to point (A). Positive to chassis.
Connect the negative lead of a 1.5 volt bias supply to point (B). Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	1000mmf	High side to pin 1 (grid) of 6BZ6 (V4). Low side to chassis.	43.0MC (10MC Swp)	47.25MC	Any non-interfering channel	Vert. Amp. thru 10K to point (C). Low side to chassis.	A1, A2	Adjust sweep so that 47.25MC trap is visible. Adjust A1 and A2 to place marker in trap notch as in Fig. 1. This may be done with slugs at two different positions. Use position with slugs farthest out of coil forms.
2.	"	"	"	42.25MC 45.0MC 45.75MC	"	"	A3, A4, A5	Adjust for response similar to Fig. 2. Adjust A3 for maximum gain, A4 to place 45.75MC marker at 50% on curve and A5 to place 42.25MC at 50% on opposite side of curve. Recheck 47.25MC traps.
3.	"	High side to point (D). Low side to chassis.	"	41.25MC	"	"	A6	Adjust sweep so that 41.25MC trap notch is visible. Adjust A6 to place marker in trap notch as in Fig. 3. This may be done with slug in two positions. Use the one with slug farthest from coil.
4.	"	"	"	41.25MC 42.25MC 45.0MC 45.75MC 47.25MC	"	"	A7, A8	Adjust A7 for maximum gain with 45.75MC marker at 50% as in Fig. 2. Adjust A8 for maximum gain and proper tilt. It may be necessary to repeat these two adjustments. Recheck step 3.
5.	1000Ω Carbon Resistor	High side to point (E). Low side to chassis.	"	"	UHF	"	A9	Adjust for response similar to Fig. 2 with MINIMUM tilt.

SOUND IF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6.	.005mfd	High side to point (F). Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	DC probe to point (G). Low side to chassis.	A10, A11, A12	Adjust for maximum deflection. Use only enough sweep generator output to provide a usable indication on VTVM.
7.	"	"	"	"	"	A13	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

4.5MC TRAP ALIGNMENT

Tune in a TV station and tune the fine tuning slowly clockwise until 4.5MC beat interference becomes visible in the pattern. Adjust A14 until the horizontal scanning lines are smooth and continuous.

VHF OSCILLATOR ALIGNMENT

Connect bias as under "Video IF Alignment".
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Set the fine tuning control to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Fig. 4	Across VHF antenna terminals thru matching network (Fig. 4).	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K to point (C). Low side to chassis.	A15	Adjust to place sound marker in trap notch as in Fig. 5. Video marker should fall at 50%.
			207MC	205.25MC 209.75MC	12		A16	
			201MC	199.25MC 203.75MC	11		A17	
			195MC	193.25MC 197.75MC	10		A18	
			189MC	187.25MC 191.75MC	9		A19	
			183MC	181.25MC 185.75MC	8		A20	
			177MC	175.25MC 179.75MC	7		A21	
			85MC	83.25MC 87.75MC	6		A22	
			79MC	77.25MC 81.75MC	5		A23	
			69MC	67.25MC 71.75MC	4		A24	
			63MC	61.25MC 65.75MC	3		A25	
			57MC	55.25MC 59.75MC	2		A26	

ALIGNMENT INSTRUCTIONS (cont)

UHF TUNER AND VHF RF AND MIXER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

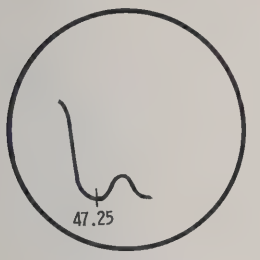


FIG. 1

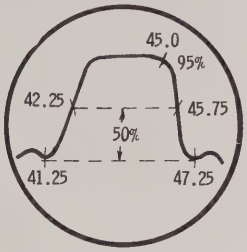


FIG. 2

FIG. 3

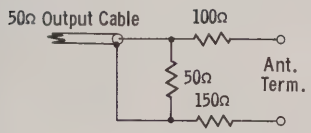


FIG. 4

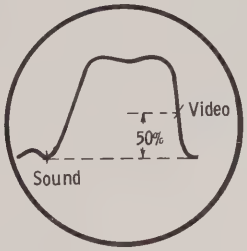
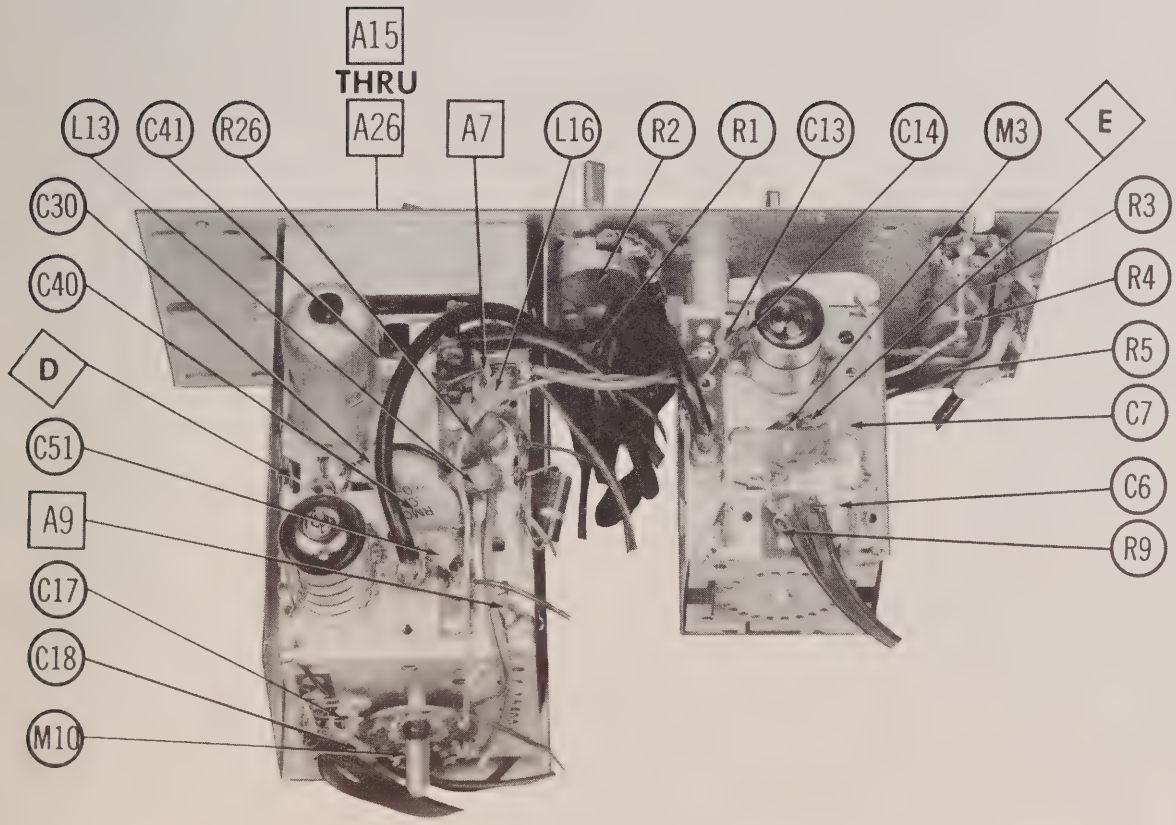


FIG. 5



RF TUNER—TOP VIEW

MAGNAVOX CHASSIS U23-01AA, U23-02AA, U23-03AA, V23-01AA, V23-02AA, V23-03AA, AMP-135BB

FOLDER 2

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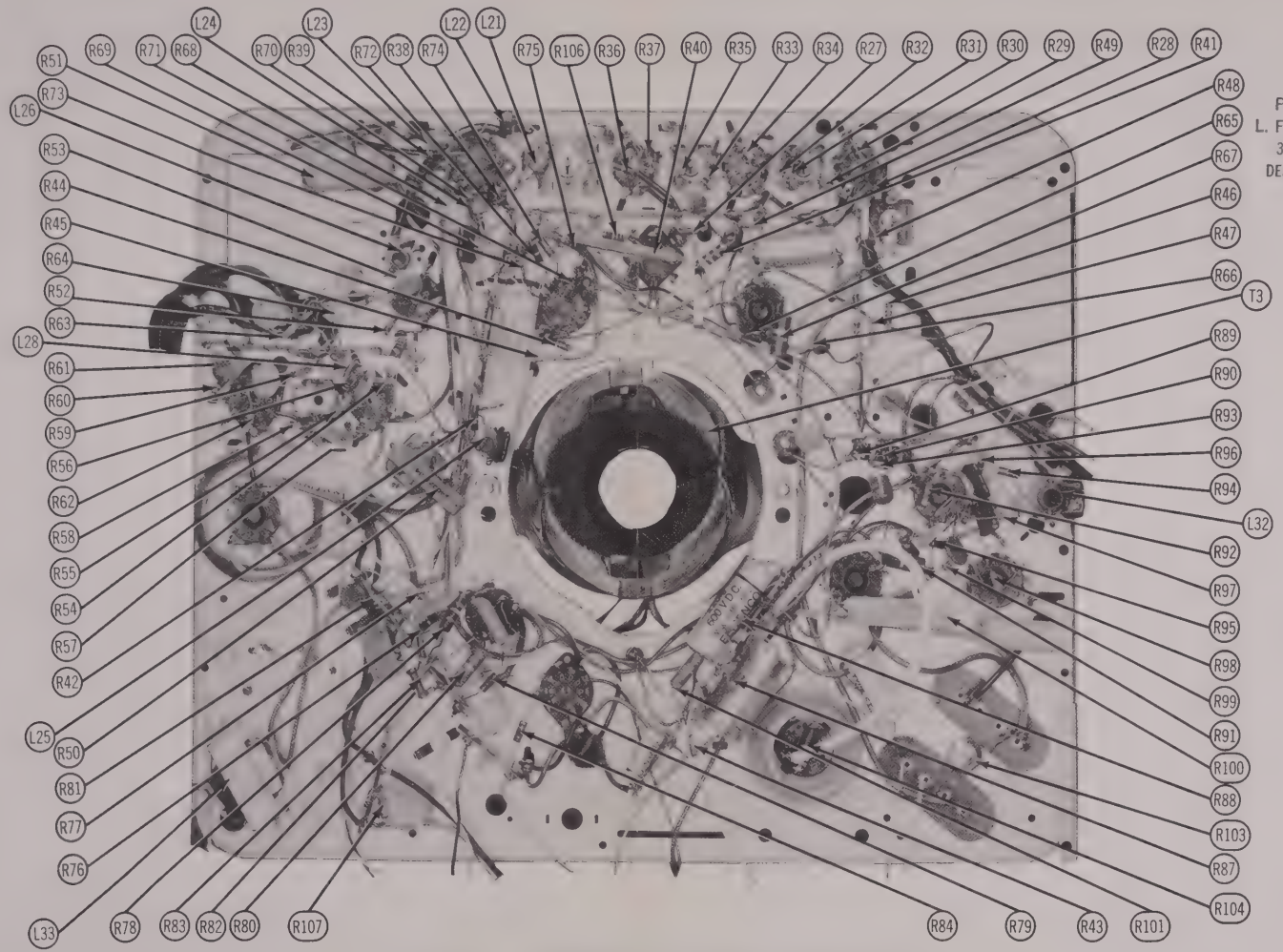
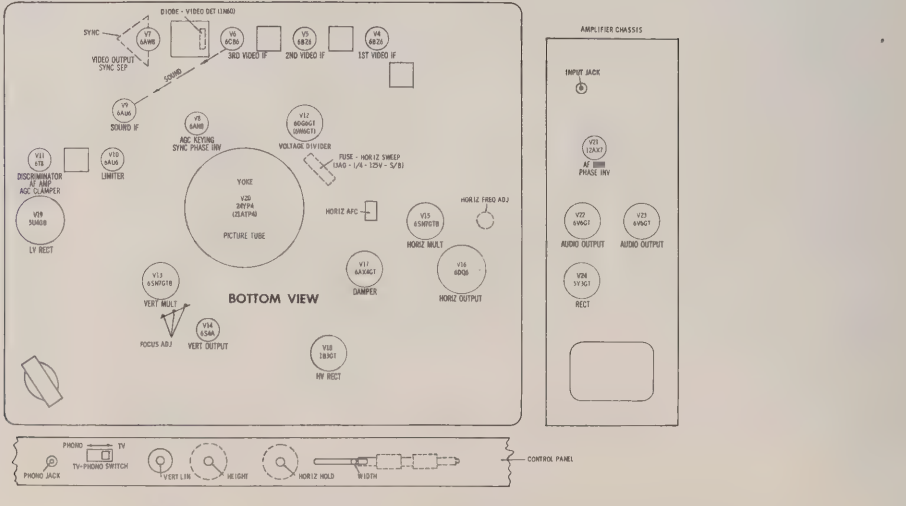


CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6AF4A	■ *920Ω	22K	0Ω	.1Ω	1.1Ω	22K	■ *920Ω		
V2	6BC8	† 2200Ω	250K	INF	0Ω	.1Ω	INF	1.1meg	0Ω	0Ω
V3	6U8	■ 4800Ω	360K	■ 10K	0Ω	.1Ω	† 5500Ω	0Ω	0Ω	10K
V4	6BZ6	56K	47Ω	.1Ω	0Ω	■ 1000Ω	■ 1000Ω	0Ω		
V5	6BZ6	57K	47Ω	.1Ω	0Ω	■ 1000Ω	■ 1000Ω	0Ω		
V6	6CB6	.1Ω	120Ω	.1Ω	0Ω	■ 1000Ω	■ 1000Ω	0Ω		
V7	6AW8	0Ω	4.7meg	† 1meg	0Ω	.1Ω	• 170Ω	3900Ω	† 13K	† 7500Ω
V8	6AN8	† 4000Ω	22K	3300Ω	0Ω	.1Ω	350K	ǂ1500Ω	† 36K	† 3300Ω
V9	6AU6	.4Ω	0Ω	.1Ω	0Ω	■ 1000Ω	■ 1000Ω	82Ω		
V10	6AU6	270K	0Ω	.1Ω	0Ω	■ 27K	■ 39K	0Ω		
V11	6T8	100K	100K	200K	.1Ω	0Ω	1meg	0Ω	4.7meg	† 470K
V12	6DG6GT	NC	.1Ω	† 220Ω	† 220Ω	530K	NC	0Ω	¶	
V13	6SN7GTB	• 2meg	ǂ1.7meg	0Ω	1meg	ǂ270K	0Ω	.1Ω	0Ω	
V14	6S4A	NC	• 2500Ω	• 950K	0Ω	.1Ω	• 950K	NC	NC	ǂ2700Ω
V15	6SN7GTB	450K	† 6900Ω	1300Ω	• 115K	† 120K	1300Ω	0Ω	.1Ω	
V16	6DQ6	NC	0Ω	NC	† 10K	470K	TP	.1Ω	0Ω	TOP CAP ǂ26Ω
V17	6AX4GT	TP	NC	¶	NC	† 0Ω	NC	0Ω	.1Ω	
V18	1B3GT		PINS	1 THRU 8	HAVE	INFINITE RESISTANCE				TOP CAP ǂ490Ω
V19	5U4GB	NC	¶	NC	22Ω	TP	24Ω	NC	¶	
V20	24YP4	0Ω	0Ω	PIN 6 ǂ1500Ω	PIN 10 ǂ270K	PIN 11 • 430K	PIN 12 .1Ω			
V21	12AX7	† † 275K	122K	3300Ω	0Ω	0Ω	† † 52K	8.2meg	47K	.1Ω
V22	6V6GT	NC	.1Ω	† † 120Ω	† † 470Ω	470K	NC	0Ω	270Ω	
V23	6V6GT	NC	0Ω	† † 130Ω	† † 470Ω	470K	NC	.1Ω	270Ω	
V24	5Y3GT	NC	¶	NC	100Ω	NC	90Ω	NC	¶	

¶ THIS READING CAN VARY GREATLY, (10K MINIMUM), DUE TO THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
■ MEASURED FROM 140V SOURCE.
* MEASURED IN "UHF" POSITION.
† MEASURED FROM 290V SOURCE.
ǂ MEASURED FROM PIN 3 OF V17.
† † MEASURED FROM 340V SOURCE.
NC NO CONNECTION.
TP TIE POINT.



TUBE PLACEMENT CHART

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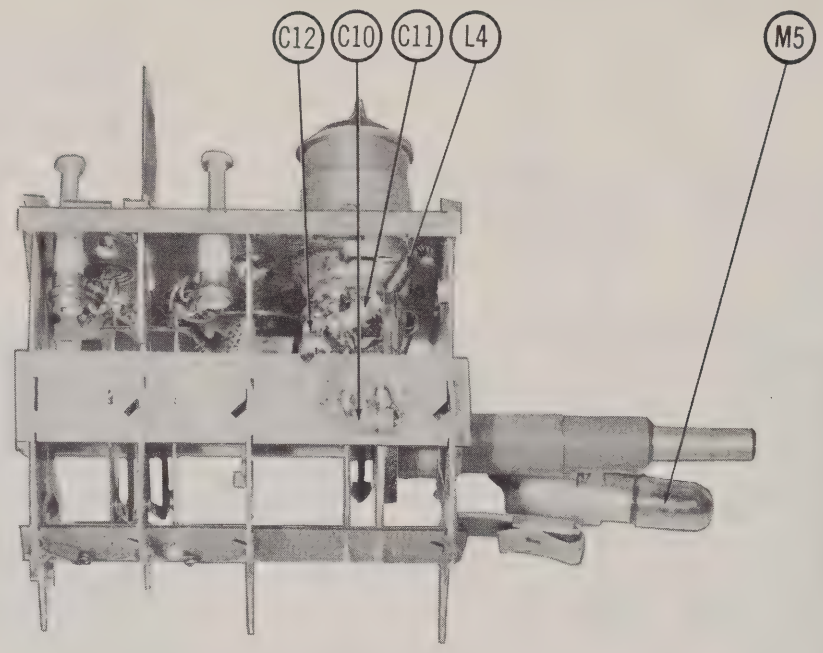
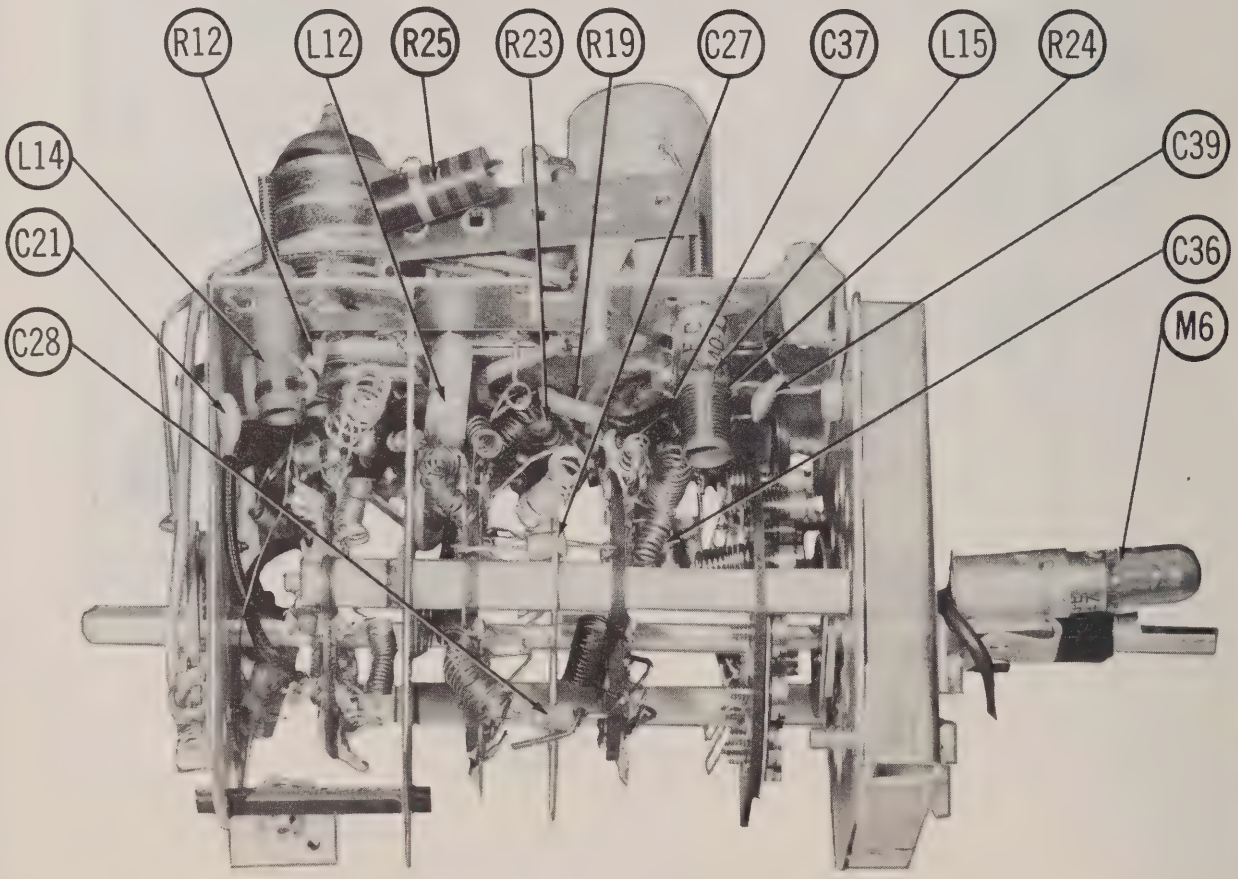
DENVER, COLORADO

MAGNAVOX CHASSIS U23-01AA, U23-02AA, U23-03AA, V23-01AA, V23-02AA, V23-03AA, AMP-135BB

CHASSIS TOP VIEW



UHF TUNER-LEFT SIDE



RF TUNER-LEFT SIDE

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	UHF Oscillator	6AF4A	
V2	RF Amplifier	6BC8	
V3	Mixer-Oscillator	6U8	
V4	1st. Video IF Amp.	6BZ6	
V5	2nd. Video IF Amp.	6BZ6	
V6	3rd. Video IF Amp.	6CB6	
V7	Video Output-Sync Sep.	6AW8	
V8	AGC Keying-Sync Phase Inv.	6AN8	
V9	Sound IF Amp.	6AU6	
V10	Limiter	6AU6	
V11	Discriminator-AF Amp.-AGC Clamper	6T8	
V12	Voltage Divider	6DG6GT	Note 1
V13	Vert. Mult.	6SN7GTB	
V14	Vert. Output	6S4A	
V15	Horiz. Mult.	6SN7GTB	
V16	Horiz. Output	6DQ6	
V17	Damper	6AX4GT	
V18	HV Rectifier	1B3GT	
V19	LV Rectifier	5U4GB	

Note 1. A 6W6GT may be used in some versions.

PICTURE TUBE

ITEM No.	REPLACEMENT DATA			NOTES
	MAGNAVOX PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	
V20	24YP4	24DP4A/ 24YP4 ①	24DP4A/ 24YP4 ②	① Aluminized ② Silver screen "85"
	21ATP4	21ATP4A/ 21ATP4 ①	21ATP4/ 21ATP4A②	

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ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	MAGNAVOX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■40	350	270021-52	RE1008	D0471	FP454.2		Q-221.5	TVL-4631
B	▲10	350				TC68		MT-4510	
C	50	50							
D	▲70	350							
C2A	▲30	350	270021-64	AFH4-56 -93.5	D0418	FP420.33		Q-222.2	R2551 *
B	▲5	350				TC62		MT-4504	
C	100	200							
D	■20	350							
C3	2	50	270027-22	PRS50V2	BBR2-50	TC302	TD-2-50	MT-0502	TVA-1301
C4	20	350	270027-20	PRS450V20	BR2035	TC65	TD-20-350	MT-4520	TVA-1608

* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	MAGNAVOX PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C5	1.2		250221-115	NPO-SI 1.0	TCZ-1		TCO-1		5TCCB-V1	
C6			250188-10							
C7			250188-10							
C8	1		250221-114	NPO-SI 1.0	TCZ-1		TCO-1		5TCCB-V1	
C9	47		250175-21		TCN-47		TC7-47			N750 5%
C10	.62		250221-1001		TCZ-R5		TCO-.5			5%
C11	10		250088-140							N2200
C12	2.3-4		250220-2							
C13	470		250175-8	BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C14	470		250175-8	BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C15	15		250207-84		TCZ-15					2%
C16	15		250207-84		TCZ-15					2%
C17	39		250175-20		TCN-39		TC7-39			N750 5%
C18	39		250175-20		TCN-39		TC7-39			N750 5%
C19	10		250221-127	SI 10	D6-100	LT6Q1	GP-10	UC-541	5GA-Q1	
C20			250188-6							
C21	470		250175-8	BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C22	470		250175-8	BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C23	1500		250175-10	BPD-0015	DD-152	BYA10D15	ED-1500	DC5215	5HK-D15	
C24	100		250175-24	BPD-0001	DD-101	L10T1	GP-100	UC-531	5GA-T1	
C25	.18		250216-4							
C26	15		250207-5	SI15	D6-150	LT6Q15	GP-15	UC-5415	5GA-Q15	
C27	1.2		250221-115	NPO-SI 1.0	TCZ-1		TCO-1		5TCCB-V1	①
C28	.36		250216-5							②
C29	470		250175-8	BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C30	470		250175-8	BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C31	6.8		250221-125	NPO-SI 6.8	TCZ-6R8	CTA6V68C	TCO-6.8	ZT-5568	5TCCB-V68	
C32	6		250088-143							N3300
C33	10		250088-136	N750-SI 10	TCN-10	CTA6Q1U	TC7-10	NT-541	5TCU-Q1	N750
C34	470		250218-15		D6-471	5R5T47	ED-470		MS-347	10%
C35	10		250088-136	N750-SI 10	TCN-10	CTA6Q1U	TC7-10	NT-541	5TCU-Q1	N750
C36	1.0		250088-144							N2200
C37	470		250175-8	BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C38	1500		250175-10	BPD-0015	DD-152	BYA10D15	ED-1500	DC5215	5HK-D15	
C39	470		250175-8	BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	③
C40	20000		250175-34	BPD-02	DD-203	BYB6S2	ED-02		5HK-S2	
C41	36		250226-319	1469-000036	TCZ-36	22R5Q36	TCO-36		MS-436	5%
C42	800		250218-14			1R5T8		MCB251	MS-38	10%
C43	680		250218-4	BPD-00068	DD-681	BYA10T68	ED-680	UC-5368	5GA-T68	
C44	800		250218-14			1R5T8		MCB251	MS-38	10%
C45	800		250218-14			1R5T8		MCB251	MS-38	10%
C46	1500		250218-18	BPD-0015	DD-152	BYA10D15	ED-1500	DC5215	5HK-D15	
C47	.22	400	250211-15	P488N-22		CUB4P22		GEM-4022	4TM-P22	
C48	10000		250175-6	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C49	100		250229-530	1468-0001	D6-101	5W5T1	ED-100	MC235	1FM-31	
C50	.22	200	250202-15	P288N-22		CUB2P22		GEM-2022	2TM-P22	
C51	470		250218-15	BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C52	1000	2000	250175-27	HVD-30-1000	DD30-102	HVB20D1	HD3-1000	DC3021	20HKB-D1	
C53	4.7		250221-123	NPO-SI 4.7	TCZ-4R7	C10V47C	TCO-4.7	ZT-5547	5TCCB-V47	
C54	68		250218-7	BPD-000068	DD-680	L10Q68	ED-68	UC-5468	5GA-Q68	
C55	68		250218-7	BPD-000068	DD-680	L10Q68	ED-68	UC-5468	5GA-Q68	
C56	3900		250175-31	BPD-004	DD-392	BYA10D4	ED-004	UC-524	5GA-D4	
C57	5000		250175-1	BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C58	22		250207-42	SI 22	D6-220	LT6Q22	GP-22	UC-5422	5GA-Q22	
C59	5000		250175-1	BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C60	5000		250175-1	BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C61	100		250207-46	SI 100	D6-101	LT6T1	GP-100	UC-531	5GA-T1	

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA MAGNAVOX PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C82	9000		2803178-1	BPD-008	BD-502	BYA10D6	ED-005	DCS35	5HK-D5	3
C83	9000		2803178-1	BPD-008	BD-502	BYA10D8	ED-005	DCS35	5HK-D6	
C84	10000		2501178-8	BPD-01	BD-103	BYA8SL	ED-01	DCS11	5HK-S1	
C85	10000		2803178-33	BPD-01	BD-103	BYA8SL	ED-01	DCS11	5HK-S1	
C86	3000		2803164-19	BPD-003	BD-301	BYA10D2	ED-003	DCS33	5HK-D3	
C87	.0033	600	2803U-3	P4S3N-0033	D6-223	CUB4D33	GP-3200	GEM-6333	6TM-D33	
C88	150		2502329-534	1484-0001	D8-151	SWS715	ED-150	UC-3315	1FM-315	
C89	.1	400	2502329-1	P4S3N-1	DF-104	CUB4P1		GEM-6447	4TM-P1	
C90	3000		2803164-13	BPD-008	DD-802	BYA10D6	ED-005	DCS35	5HK-D5	
C91	3700		2803U-1048	1484-0037		UR5D2T	CY30C37SJ		M8-237	8%
C92	.047	400	2503123-7	P4S3N-047	DF-503	CUB4S47		GEM-6147	4TM-S47	
C93	1000		2503125-8	1484-001		UR5D1	ED-1000	MCB255	M8-31	10%
C94	.1	400	2503U-1	P4S3N-1	DF-104	CUB4P1		GEM-6410	4TM-P1	
C95	.0033	600	2503U-4	P4S3N-0033	D6-223	CUB5D33	GP-3300	GEM-6333	6TM-D33	
C96	1000		2502125-8			UR5D1	ED-1000	MCB255	M8-31	10%
C97	1000		2502125-8			UR5D1	ED-1000	MCB255	M8-31	10%
C98	.0047	600	2503123-4					GEM-16347		10%
C99	.047	200	2503123-5	P2S5N-047	DF-503	CUB2S47		GEM-6147	2TM-S47	
C90	360		2503239-343	1484-00028		5R5T36	CY15C361J		M8-336	5%
C91	3300		2503239-686	1484-0039		UR5D39	CY30C392K		M8-339	10%
C92	1000		2502125-8			UR5D1	ED-1000	MCB255	M8-31	10%
C93	470		2502239-346	1484-00047		5R5T47	CY15C47SJ		M8-347	5%
C94	1000		2502125-8	1484-001		UR5D1	ED-1000	MCB255	M8-31	10%
C95	.047	400	2503U-11	P4S3N-047	DF-503	CUB4S47		GEM-6147	4TM-S47	
C96	.047	400	2503U-11	P4S3N-047	DF-503	CUB4S47		GEM-6147	4TM-S47	
C97	.1	600	2503U-13	P6S3N-1		DF-104		GEM-601	6TM-P1	
C98	47	6000	2803T5-33							10%
C99A	10000		2503125-3	BPD-33X	DD5-102	BY06D5U	ED-01	DCS11	5HK-S61	
B	10000						ED-01	DCS11		
C90	680		2503U8-4	BPD-00068	DD-681	BYA10T68	ED-680	UC-5368	5GA-T68	

1 Not used in some versions
2 Some versions use .56mfd in this application
Some versions use 27mmf in this application
Some versions use 10000mmf (Part #2501T5-6) in this application.

CONTROLS

ITEM No.	RATING RESIST ANCE	RATING WATTS	REPLACEMENT DATA MAGNAVOX PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	2301U6-1	B-70	A47-1meg-Z	GS3-137	UB3	Volume
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			KB-1 or KB-1 *	SWE-13	Y8-1	US-26	
R2A	600Ω	½	2303U8-66	B-615		G3Y-106	UY81R	Contrast
B	Shaft			Not Req.		Not Req.	Not Req.	
R3A	1.5Meg	½	2303U3-3	B-743	A47-1.5meg-B	GS-138	TA15S1	Brightness
B	Shaft			Not Req.	KB-3	Not Req.	Not Req.	
R4A	500K	½	2303U3-4	B-60	A47-500K-Z	GS3-133	TA55A	Tone
B	Shaft			Not Req.	KB-3	Not Req.	Not Req.	
R5A	1.5Meg	½	2303U3-3	B-743	A47-1.5meg-B	GS1-138	TA15S1	Vert. Hold
B	Shaft			Not Req.	KB-3	Not Req.	Not Req.	
R6A	50K	½	2303U3-1	BX-31	A47-50K-B	GS1-133	TA5L	Horiz. Hold
B	Shaft			Not Req.	FS3-1/4	Not Req.	Not Req.	
R7A	5.5meg	½	2303U8-3	BZ-49	A47-5.5meg-B	GS1-339	TA55L	Vert. Height
B	Shaft			Not Req.	FS3-1/4	BQ	Not Req.	
R8	3000Ω	2(WW)	2303U0-3		B3-3000		FL-4K	Vert. Lin.

* Use KR-1 on red label control only.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	MAGNAVOX PART No.	NOTES
R9	100K		2301U4-86	
R10	22K		2301U4-78	
R11	820Ω	1	2301U5-81	
R12	100K		2301U4-86	
R13	470K		2301U4-94	
R14	470K		2301U4-94	
R15	8200Ω		2301U4-73	
R16	560Ω		2301U4-60	
R17	33K		2301U4-82	
R18	330K		2301U4-92	
R19	2200Ω		2301U4-68	Note 1
R20	10K		2301U4-74	
R21	180K		2301U4-89	
R22	10K		2301U4-74	
R23	4700Ω	1	2301U4-70	
R24	3300		2301U4-53	
R25	2200Ω	2	2301U6-66	
R26	4700Ω	1	2301U5-70	
R27	100Ω		2301U4-50	
R28	3800Ω 5%		2300W4-172	
R29	1200Ω		2301U4-62	
R30	47Ω		2301U4-46	
R31	22K 5%		2300W4-191	
R32	1000Ω		2301U4-62	
R33	1000Ω		2301U4-62	
R34	47Ω		2301U4-46	
R35	47K		2301U4-82	
R36	1000Ω		2301U4-62	
R37	330Ω		2301U4-53	
R38	39000 5%		2300W4-173	
R39	10K		2301U4-74	
R40	15K	5	2301U5-78	
R41	47K	1	2301U5-82	
R42	220K		2301U4-90	
R43	270K		2301U4-91	
R44	100K 5%		2300W4-207	
R45	33K		2301U4-80	
R46	820K 5%		2300W4-229	
R47	9 1meg 5%		2300W4-254	
R48	330K 5%		2300W4-219	
R49	56K 5%		2300W4-201	
R50	33000	5	2400T1-34	
R51	43000	5	2400T4-1	
R52	10000		2301U4-62	
R53	820		2301U4-49	
R54	270K		2301U4-94	
R55	12K		2301U4-75	
R56	47K		2301U4-79	
R57	100K		2301U4-86	
R58	100K		2301U4-86	
R59	56K		2301U4-84	Note 2
R60	4.7meg		2301U4-108	
R61	47K		2301U4-82	
R62	470K		2301U4-94	
R63	220K		2301U4-90	
R64	330K		2301U4-92	
R65	1meg 5%		2300W4-231	
R66	1.2meg 5%	2	2300W4-223	Note 3
R67	220Ω		2301U6-54	
R68	4.7meg		2301U4-106	
R69	47K		2301U4-82	
R70	1meg		2301U4-98	
R71	22K		2301U4-78	
R72	1meg		2301U4-98	
R73	33000 5%		2300W4-171	
R74	33000 5%		2300W4-170	
R75	270Ω		2301U4-55	
R76	1meg		2301U4-98	
R77	47K		2301U4-82	
R78	270K	1	2301U5-91	
R79	1.5meg 5%		2300W4-235	
R80	1.2meg	1	2301U5-99	
R81	13K 5%		2300W4-166	
R82	18-3160Ω		2301U4-101	
R83	Note 4		2301U0-2	Note 4
R84	1000Ω		2301U4-62	
R85	1250Ω 5%		2300W4-143	
R86	2200Ω 5%		2300W4-143	
R87	220Ω		2301U4-50	
R88	270K		2301U4-91	
R89	100K		2301U4-86	
R90	100K	2	2301U4-86	
R91	18Ω		2301U6-42	
R92	4.7meg		2301U4-106	
R93	470K		2301U4-94	
R94	68000Ω 5%		2300W4-179	
R95	1300Ω 5%		2300W4-152	
R96	100K 5%		2300W4-207	
R97	120K 5%		2300W4-209	
R98	12K		2301U4-75	

* Parallel with 15K resistor.
▲ Parallel with 4700Ω resistor
* Disregard tag.
Note 1. Alternate part number.

RESISTORS (cont)

ITEM No	RATING OHMS	RATING WATT	MAGNAVOX PART No.	NOTES
R99	470K		2301U4-94	
R100	10K	5	2400T1-9	
R101	1500Ω	1	2301U5-84	
R102	15K	1	2301U5-76	
R103	68000Ω 5%		2300W4-179	
R104	3.9Ω	1	2301U7-3	
R105	33K		2301U4-78	
R106	680Ω		2301U4-60	
R107	130K		2301U0-1	
R108	4700			

Note 1. Some versions may use a 10K (Part #2301U4-74) in this application.
Note 2. Some versions may use a 33K (Part #2301U4-80) in this application.
Note 3. Not used in VHF versions
Note 4. Negative temperature compensation resistor (Approximately 800K Cold).

TRANSFORMER (POWER)

ITEM No	RATING PRI	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	MAGNAVOX PART No.	REPLACEMENT DATA Halldorson PART No.	REPLACEMENT DATA Merit PART No.	REPLACEMENT DATA Stancor PART No.	REPLACEMENT DATA Thordorson PART No.	REPLACEMENT DATA Triad PART No.
T1	117VAC	580VCT @ 1.7A	5V @ 3A	6.3V @ 7.5A	3000W1-1					R-69BC①

① Drill new mounting hole.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	MAGNAVOX PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordorson PART No.	Triad PART No.	NOTES
T2	Vert Output	C-3202S5-2							
	Alt. Vert. Output	3202S5-2							
T3A	Yoke-Horiz.(Shld)	3806T7-2	DF812	MDF-92	Y90F19/43	DY-15A	Y-16	Y-41	
B	(90°)- Vert. (65Mfd)								
	Alt. Yoke	3606T7-1	DF812	MDF-92	Y90F19/43	DY-15A	Y-16	Y-41	
	Yoke Cover	3807U1-1							
T4	Horiz. Output	3606S3			X152 *	A-8295 *	FLY-79 *	D-92 *	
	Alt Horiz Output	3606S3-1			X152 *	A-8295 *	FLY-79 *	D-92 *	
T5	Horiz Width Coil	3605S5-1		MWC-10			WC-24	WLC-5	
A	Parallel Coil (4 4.29Mfd)								
B	Series Coil (35.2 3Mfd)								

① Use original yoke damping network and rear cover.

***HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA**

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL (CONNECTIONS)	Halldorson Replacement Connections	Merit Replacement Connections	Ram Replacement Connections	Stancor Replacement Connections	Thordorson Replacement Connections	Triad Replacement Connections
8			8	8	8	8
5		5	5	6	5	
3		3	3	3	3	
4		4	4	2	4	
2		2	2	2	2	
1		1	1	1	1	

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP	REPLACEMENT DATA MAGNAVOX PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	6"x9"	PM	6-8Ω	583786 ①	69AN12X ①	① Phase
SP2	8"	PM	6-8Ω	583785 ①	8AN12S ①	
SP3	4"	PM	3-4Ω	585779 ①	4A07 ①	

COILS (RF-IF)

ITEM No.	USE	MAGNAVOX PART No.	NOTES
L1	RF Choke	3606T4-30	
L2	RF Choke	3606T4-30	
L3	Fil. Choke	3605S2-7	
L4	Fil. Choke	3605T4-5	
L5	Fil. Choke	3606T4-8	
L6	RF Choke	3605T4-6	
L7	RF Choke	3606T4-50	
L8	IF Coupling Coil	3805T4-13	
L9	VHF Ant. Trans.	3804S1-3	
L10	RF Choke	3606S1-8	4.7 Microhenries IRC Part #CLA

ITEM No.	USE	MAGNAVOX PART No.	NOTES
L11	RF Choke	3606S1-9	1 Microhenry IRC Part #CLA
L12	RF Choke	3606S1-1	.47 Microhenry IRC Part #CLA
L13	RF Choke	3606S1-2	.47 Microhenry IRC Part #CLA
L14	UHF IF Input Coil	3606A9-1	
L15	Mixer Plate Coil	3606S0-1	
L16	Fil. Choke	3606S1-1	.47 Microhenry IRC Part #CLA

ITEM No.	USE	MAGNAVOX PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L17	1st. Video IF	3806S4-1					Includes 41.25MC Trap
L18	2nd. Video IF	3806A4-1					Includes 47.25MC Trap
L19	3rd. Video IF	3806A4-2					Includes 47.25MC Trap
L20	4th. Video IF Assy.	3806A3-1	17-4511				
L21	Shunt Peaking Coil	3806S2-7	19-4600	TV-203	6136		400 Microhenries
L22	Series Peaking Coil	3806S2-3	19-3160 *	TV-196 *	6130 *		150 Microhenries, wound on 15K resistor
L23	Shunt Peaking Coil	3806S2-17	19-3300 ▲	TV-196 ▲	6130 ▲		253 Microhenries, wound on 470Ω resistor
L24	Series Peaking Coil	3806S2-3	19-3160 *	TV-196 *	6130 *		150 Microhenries, wound on 15K resistor
L25	4.5MC Trap	3805S4-1	17-3400	TV-151	1469 *	SF-3	
L26	1st. Sound IF	3805S4-1	17-3400	TV-151	1469 *	SF-3	
L27	2nd. Sound IF	3805S4-1	17-3400	TV-151	1469 *	SF-3	
L28	RF Choke						1.25 Microhenries
L29	Discriminator	3806S3-1	17-3495	TV-114	6304	SD-3	
		3806S2-1	17-3496	TV-114	6304	SD-3	Note 1
L30	IF Trap Coil	3806S0-1					1, 7 Microhenries
L31	IF Trap Coil	3805S0-1					1, 7 Microhenries

* Parallel with 15K resistor.
▲ Parallel with 4700Ω resistor
* Disregard tag.
Note 1. Alternate part number.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES. PRI	DC RES. SEC	REPLACEMENT DATA MAGNAVOX PART No.	REPLACEMENT DATA Meissner PART No.	REPLACEMENT DATA Merit PART No.	REPLACEMENT DATA Miller PART No.	REPLACEMENT DATA Ram PART No.	REPLACEMENT DATA Thordorson PART No.	NOTES
L32			3605T9-1		TV-165 ▲			HB-7 ▲	22-78 Millihenries ▲ Disregard tap. Drill new mounting hole.

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D.C. RESISTANCE	RATINGS INDUCTANCE @ CURRENT 1000 (~)	REPLACEMENT DATA MAGNAVOX PART No	Halldorson PART No	Merit PART No	Stancor PART No	Thordorson PART No	Triad PART No
L33	285A	35Ω	.8 Hy.	3200S8-3	C9040 ①	C-2974 ①	C-2536 ①	36C41 ①	C-37X ①

① Drill new mounting hole.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	REPLACEMENT DATA MAGNAVOX PART No	REPLACEMENT DATA
IC	Vert. Integrator		2501S6-1	

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA MAGNAVOX PART No.	FEDERAL PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	NOTES
M1			1215 [	1T1 [			① Selenium diode Two required.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA MAGNAVOX PART No. FUSE	MAGNAVOX PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M2	3AG	1/4A 225V S/B	180157-30		313.250 (3AG 1/4A-125V-S/B)	357001	MDL 1/4	4405

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA MAGNAVOX PART No.	CBS PART No.	SYLVANIA PART No.	NOTES
M3	6JB3C-8	5300S8-1	1N82A	1N82A	UHF Mixer (Clip-in)
M4	1N80 *		1N80	1N80	Video Det. (Pigtail)

* A 1N84 may be used in some versions.

MISCELLANEOUS

ITEM No.	PART NAME	MAGNAVOX PART No.	NOTES
M5	Pilot Light		#47, UHF indicator, UHF models only
M6	Pilot Light		#47, VHF indicator
M7	Tuner	700841-5	VHF
M8	Tuner	700830-3	UHF
M9	Switch	180229-1	TV-Phono (Slide type DPDT)
M10	Switch	160347-1	UHF-VHF (Rotary wafer)
M11	Centering Device	6S3116-1	Includes yoke clamp
M12	Ion Trap	360493-7	Ch. U23-01, 03
	Ion Trap	360492-5	Ch. U23-05
M13	Magnet	360492-8	Barshauen eliminator

WIRING DATA

High Voltage Lead	Use BELDEN No 8869
Shielded Hook-up Wire	Use BELDEN No 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8534 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8464 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor

AMP

PARTS LIST AND DESCRIPTIONS (Continued)

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V21	AF Amp. -Phase Inv.	12AX7	
V22	Audio Output	6V6GT	
V23	Audio Output	6V6GT	
V24	Rectifier	5Y3GT	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP	RATING VOLT	REPLACEMENT DATA MAGNAVOX PART No.	AEROVOX PART No.	CORNELL DUBILIER PART No.	MALLORY PART No.	FYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C9A	▲40	450	3700S1-56	AFH4-7B	D0640		FP439	TMQ-93	Q-380	TVL-4734
B	●30	450							
C	▲10	450							
D	20	50							

MAGNAVOX CHASSIS U23-01AA, U23-02AA, U23-03AA, V23-01AA, V23-02AA, V23-03AA, AMP-135BB

FOLDER 2

PARTS LIST AND DESCRIPTIONS (Continued)

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	MAGNAVOX PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C92	.022	200	250202-9	P288N-022	DD-203	CUB4S22	ED-02	GEM-4122	2TM-S22	
C93	470		250207-23	SI 470	D6-471	LT6T47	GP-470	UC-5347	5GA-T47	
C94	5000		250175-1	BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C95	.047	600	250201-11	P688N-047	DF-503	CUB6S47		GEM-6147	6TM-S47	
C96	.047	200	250202-11	P288N-047	DF-503	CUB2S47		GEM-4147	2TM-S47	
C97	.022	400	250202-9	P488N-022	DD-203	CUB4S22	ED-02	GEM-4122	4TM-S22	
C98	.033	200		P288N-033	DF-303	CUB6S33		GEM-4133	6TM-S33	①
C99	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	①
C100	1.0	100		P288N-1.0		CUB2W1		GEM-21	2TM-M1	

① Not used in some versions.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		MAGNAVOX PART No.	NOTES
	OHMS	WATT		
R109	100K		230104-86	
R110	22K			Note 1
R111	470K		230104-94	
R112	6800Ω			Note 1
R113	270K		230104-91	
R114	3300Ω		230104-68	
R115	10K		230104-74	
R116	8.2meg		230104-109	

ITEM No.	RATING		MAGNAVOX PART No.	NOTES
	OHMS	WATT		
R117	47K		230104-82	
R118	4700Ω		230104-70	
R119	47K		230104-82	
R120	470K		230104-94	
R121	270Ω	2	230096-55	
R122	470K		230104-94	
R123	100K		230104-86	
R124	470Ω	2	230096-58	

Note 1. Not used in some versions.

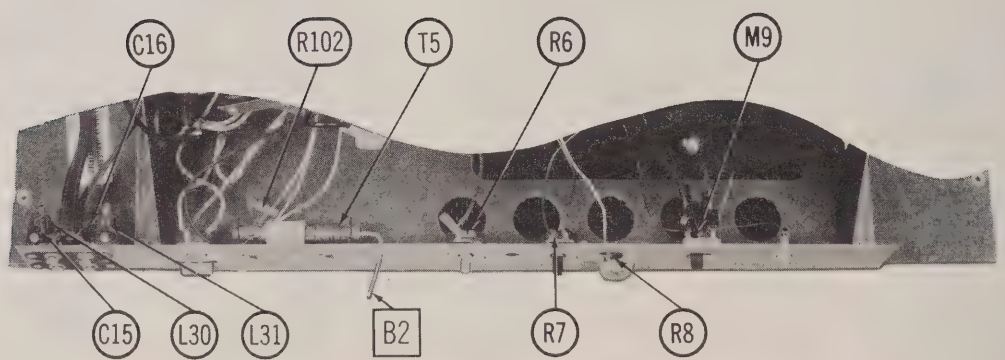
TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	MAGNAVOX PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T6	117V	610VCT	5V	6.3V	300078-2 ①	P9305 ②	P-3052②	PM8408②	22R04 ②	R-9B ②
	Ⓐ.62A	Ⓐ.082A	Ⓐ 2A	Ⓐ1.2A						

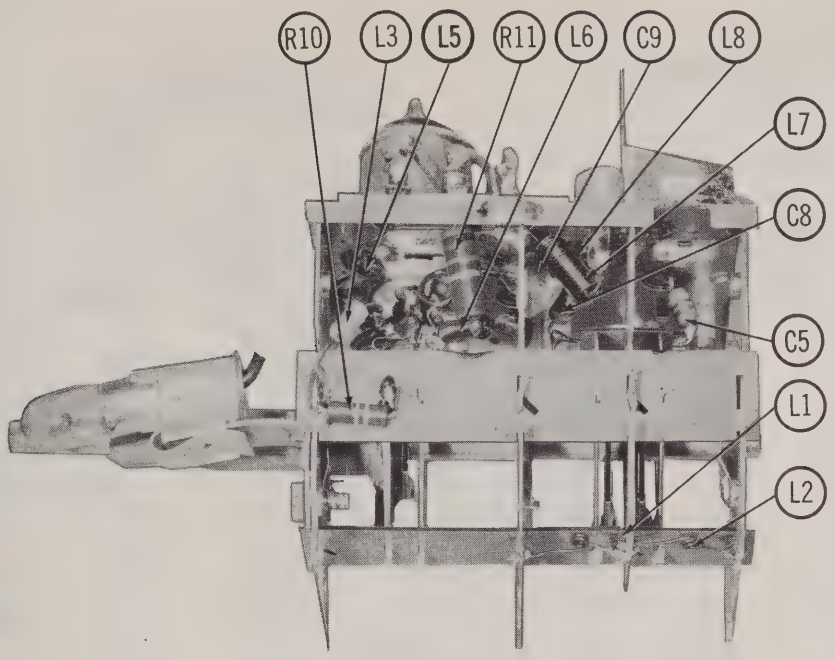
① Alternate part #300078-1.
② Tape center tap on 6.3V winding.

TRANSFORMER (AUDIO OUTPUT)

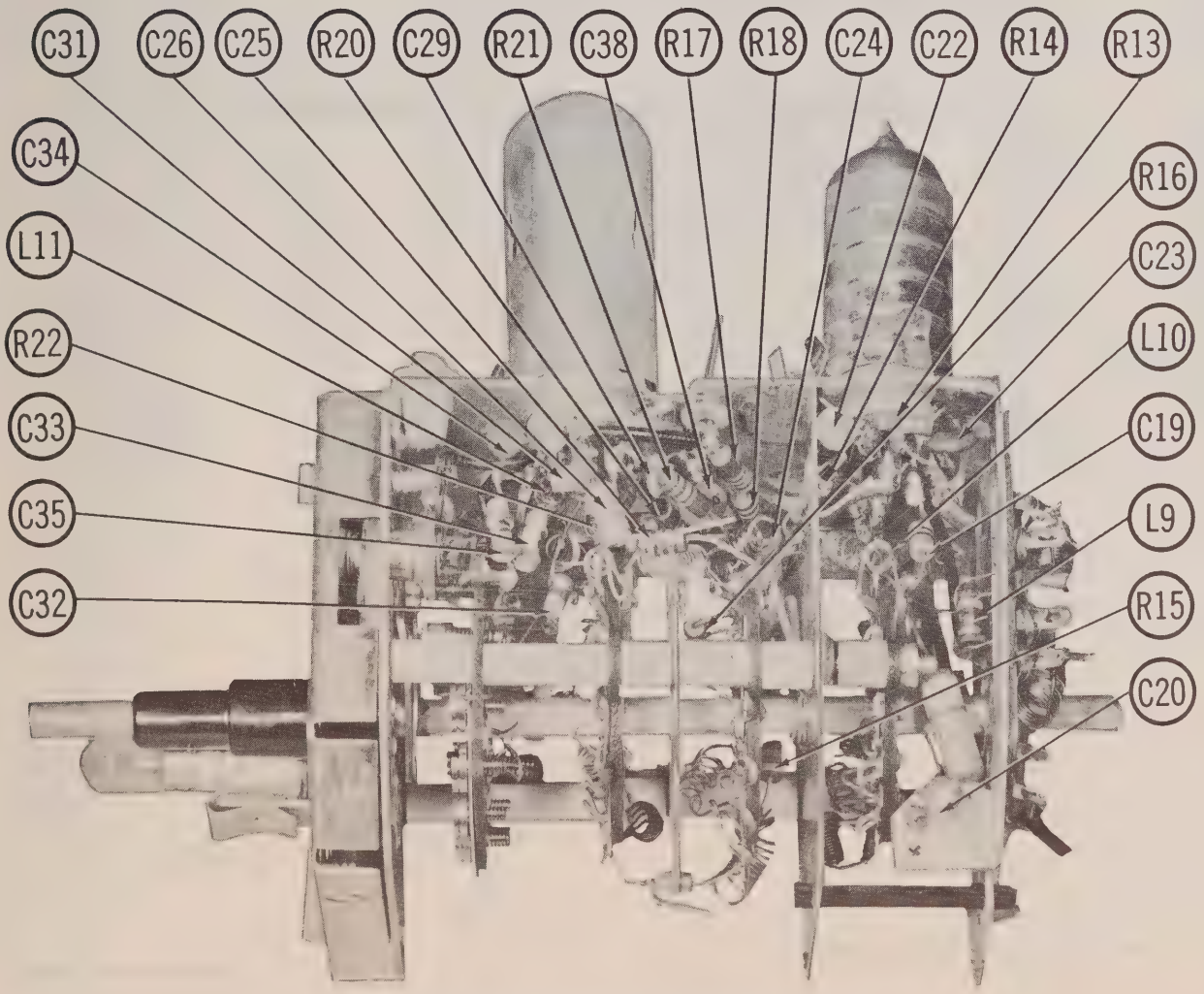
ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	MAGNAVOX PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T7	6800Ω CT	3-4Ω	330038-1	Z1011	A-2901①	A-3870	22S58	S-53X	① Drill new mounting hole.



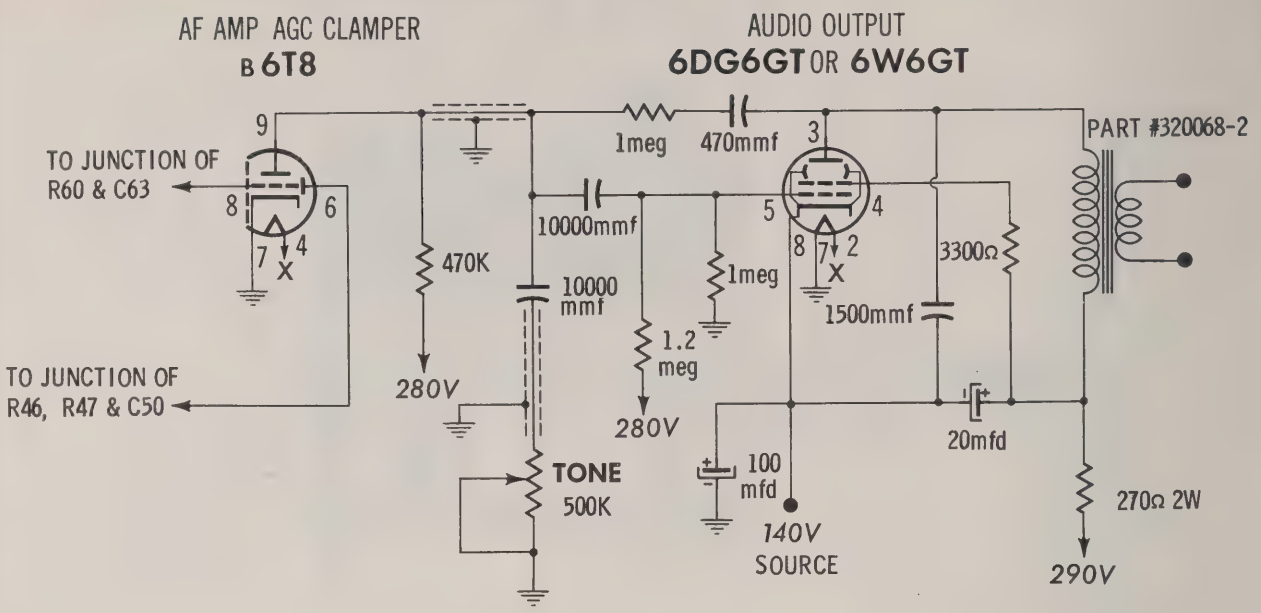
REAR CONTROL PANEL



UHF TUNER-RIGHT SIDE



RF TUNER-RIGHT SIDE

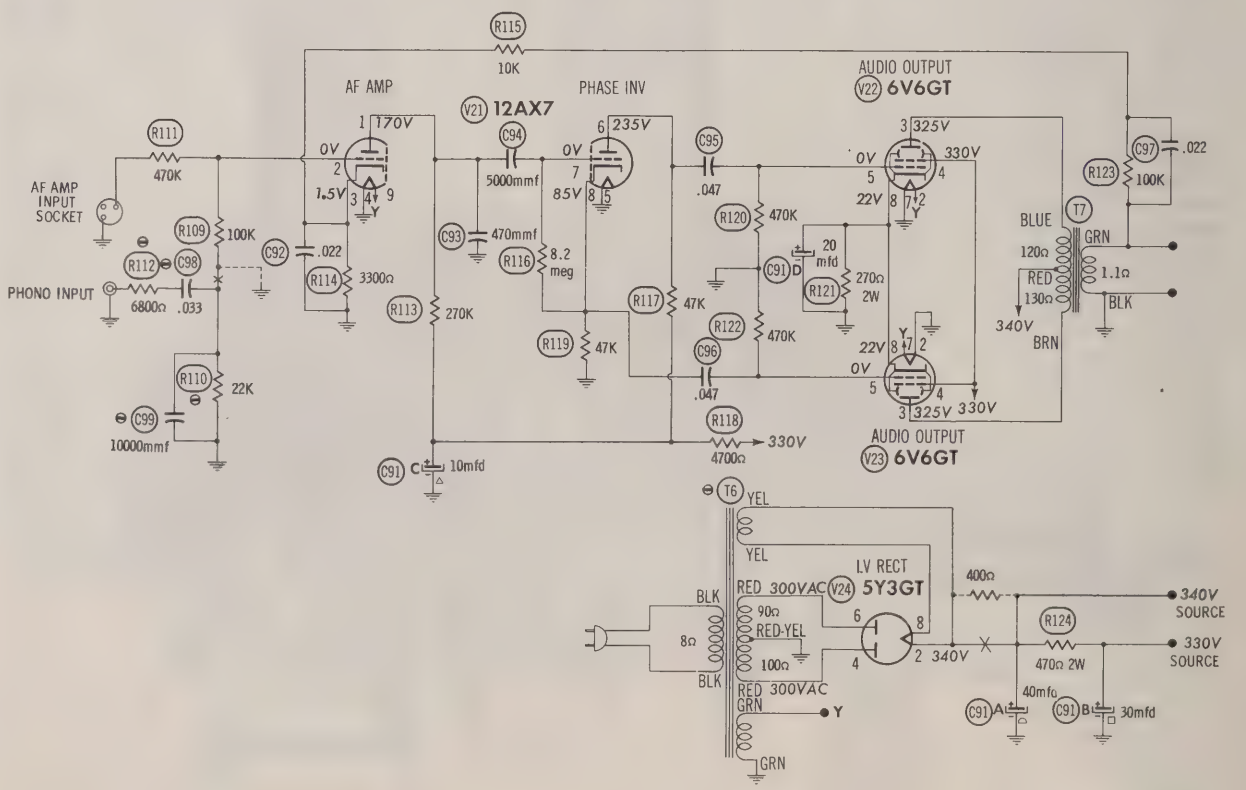


AF AMP & AUDIO OUTPUT CIRCUIT USED IN SOME VERSIONS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

Howard W. Sams & Co., Inc. 1958

ALTERNATE SOUND CIRCUIT SCHEMATIC



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CHASSIS AMP-135BB

CHASSIS AMP-135BB SCHEMATIC

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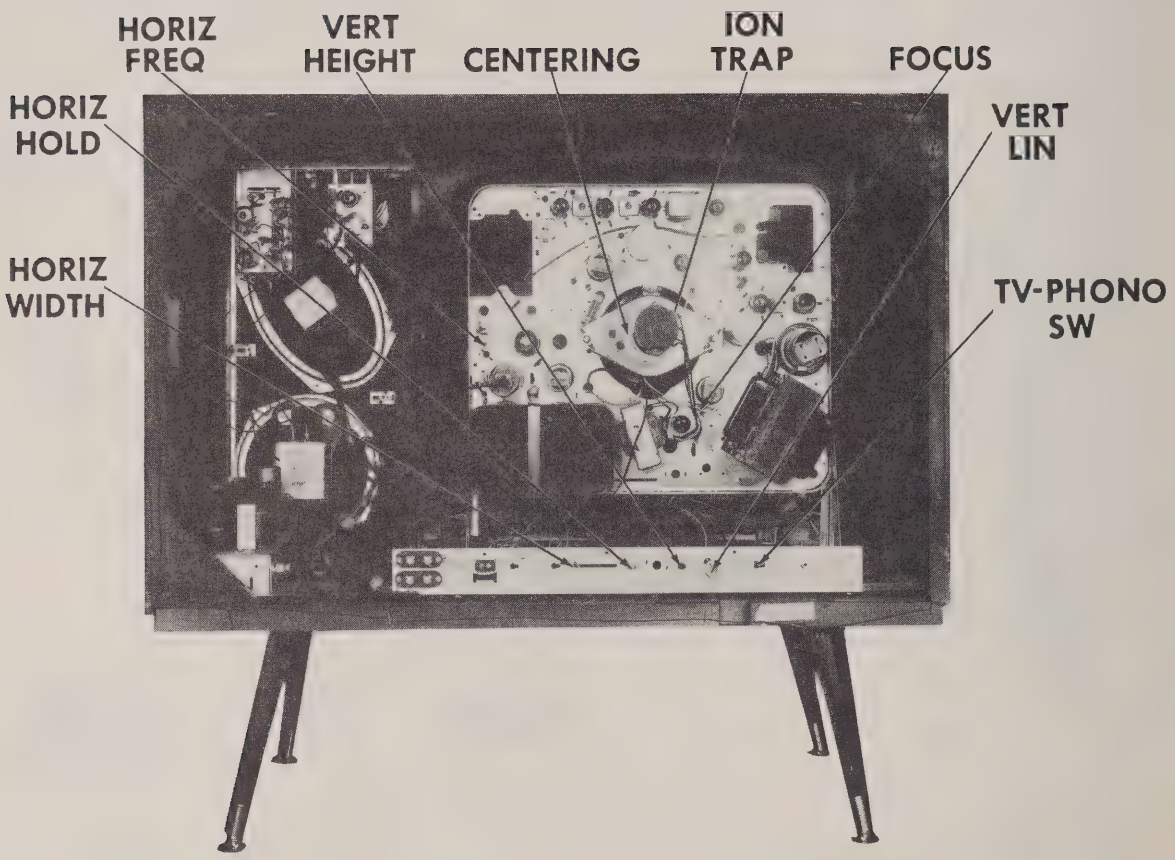
DENVER, COLORADO

AMPLIFIER CHASSIS BOTTOM VIEW



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern.

Set the horizontal hold control to the center of its range.

Turn the horizontal frequency slug (B1) slowly clockwise while switching off and on channel until the picture loses sync.

Turn B1 slowly counter clockwise until the picture regains sync, then continue one-half turn in the same direction.

The picture should now hold sync at both extreme settings of the horizontal hold control.

If necessary, readjust B1 and test for sync pull-in as above.

Adjust the horizontal width slug (B2) for a picture SLIGHTLY wider than necessary to fill the picture mask horizontally.

PHOTOFACT* Folder

*TRADE MARK

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

DISASSEMBLY INSTRUCTIONS

MODEL 8100GR (Ch. 528.50060)

CHASSIS REMOVAL

1. Remove 6 push-on type knobs from the side.
2. Slide the clamps holding the rear cover in to release. Remove the rear cover.
3. Remove 2 metal screws holding the AC interlock.
4. Remove the speaker leads, picture tube socket, yoke plug and HV lead.
5. Remove 2 metal screws holding the top chassis braces.
6. Remove 2 chassis bolts from the bottom.
7. Remove the chassis.

CAUTION NOTE

ONE SIDE OF AC LINE CONNECTED TO CHASSIS

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DENVER, COLORADO

TRADE NAME: Silvertone

MODELS	CHASSIS	MODELS	CHASSIS
8100BE, GR	528.50060	8102AQ, CL, YL, 8104CH, CO, 8106	528.50120
8100BE, GR	528.50062	8102AQ, CL, YL, 8104CH, CO, 8106	528.50121
8100BE, GR	528.50063	8102AQ, CL, YL, 8104CH, CO, 8106	528.50123
8100BE, GR	528.50064	8102AQ, CL, YL, 8104CH, CO, 8106	528.50124
8100BE, GR	528.50065	8102AQ, CL, YL, 8104CH, CO, 8106	528.50126
8100BE, GR	528.50066	8102AQ, CL, YL, 8104CH, CO, 8106	528.50127
8100BE, GR	528.50067	8110, 8112, 8150, 8152	528.50140
8100BE, GR	528.50068	8110, 8112, 8150, 8152	528.50142
8100BE, 8103AQ, CL, YL, 8107	528.50070	8110, 8112, 8150, 8152	528.50143
8100BE, 8103AQ, CL, YL, 8107	528.50071	8110, 8112, 8150, 8152	528.50145
8100BE, 8103AQ, CL, YL, 8105, CO, 8107	528.50073	8110, 8112, 8150, 8152	528.50146
8100BE, 8103AQ, CL, YL, 8105CH, CO, 8107	528.50074	8111, 8113, 8151, 8153	528.50150
8100BE, 8103AQ, CL, YL, 8105CH, CO, 8107	528.50075	8111, 8113, 8151, 8153	528.50152
8100BE, 8103AQ, CL, YL, 8105CH, CO, 8107	528.50076	8111, 8113, 8151, 8153	528.50153
		8111, 8113, 8151, 8153	528.50154
		8111, 8113, 8151, 8153	528.50155

SUPPLIER	Sears, Roebuck & Co., 925 S. Homan Avenue, Chicago, Illinois
TYPE SET	Television Receiver
TUBES	Fourteen
POWER SUPPLY	110-120 Volts AC, 60 Cycle RATING 135 Watts, 1.3 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF oscillator is possible by removing the channel selector and fine tuning knobs. Set the fine tuning at the center of its range. One slug for HIGH band adjustment is located at 3 o'clock, and should be adjusted first. The LOW band adjustment is located at 6 o'clock. Adjust for best picture and sound.

PICTURE TUBE SAFETY GLASS CLEANING

Remove 3 metal screws along the front of the bottom holding the front. Pull the front out at the bottom and remove.

SPECIAL ADJUSTMENTS

A. Focus
The focus may be varied by using various voltages on the focus anode of the picture tube. Terminating points for this purpose are shown on the photograph "Cabinet Rear View". Some picture tubes will use a beam alignment magnet similar to an ion trap which may be adjusted for the best focus.

B. Width
The width may be varied by means of a metallic sleeve located between the yoke and the picture tube neck. Adjust sleeve in or out of the yoke for a picture SLIGHTLY larger than necessary to fill the screen.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

The horizontal frequency coil is used as the horizontal hold control. Adjust the horizontal hold until the picture synchronizes horizontally. (For location, see tube placement chart).

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the ratio detector secondary (A10) located on top of chassis.

FUSE DEVICE

A circuit breaker is used for LV power supply protection and may be reset by depressing the reset button. (For location, see tube placement chart).

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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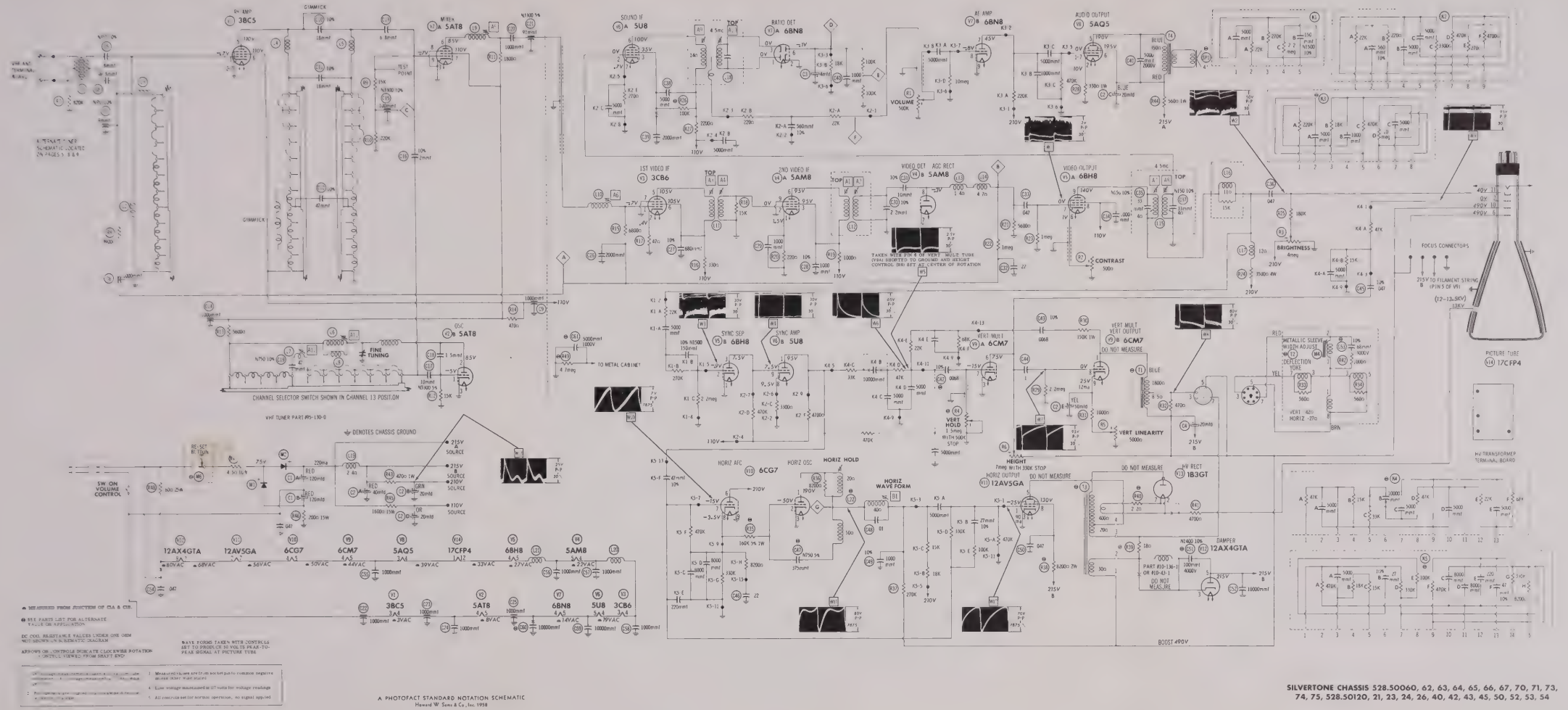
SILVERTONE CHASSIS 528.50060, 62, 63, 64, 65, 66, 67, 70, 71, 73, 74, 75, 528.50120, 21, 23, 24, 26, 40, 42, 43, 45, 50, 52, 53, 54

FOLDER 3



A PHOTOFACT STANDARD NOTATION SCHEMATIC
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SILVERTONE CHASSIS 528.50060, 62, 63, 64, 65, 66, 67, 70, 71, 73, 74, 75, 528.50120, 21, 23, 24, 26, 40, 42, 43, 45, 50, 52, 53, 54

TUBE PLACEMENT CHART

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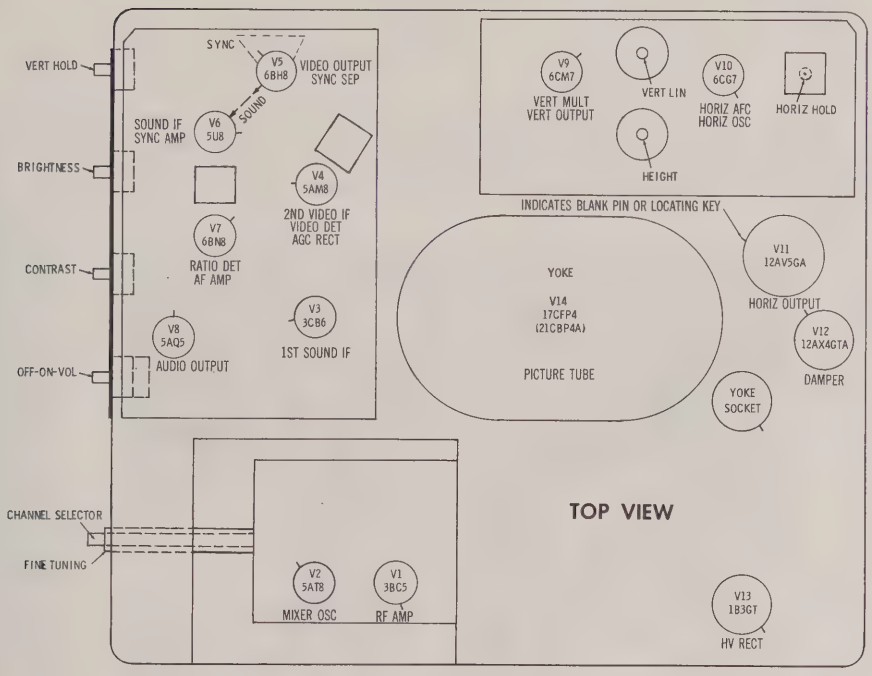


TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

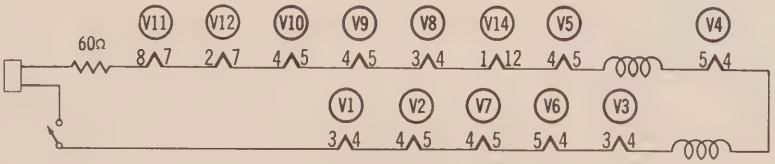
POWER SUPPLY FAILURE
No raster, no sound - **Circuit Breaker (M6), Rectifier (M1, M2)**

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V3, V4, V5**
No pic, no sound, has snow - **V1, V2**
No pic, has sound, has raster - **V5, V14**
Has pic, no sound - **V6, V7, V8**

SYNC FAILURE
No vert. sync - **V5, V6**
No horiz. sync - **V5, V6, V10**
No vert. or horiz. sync - **V5, V6**

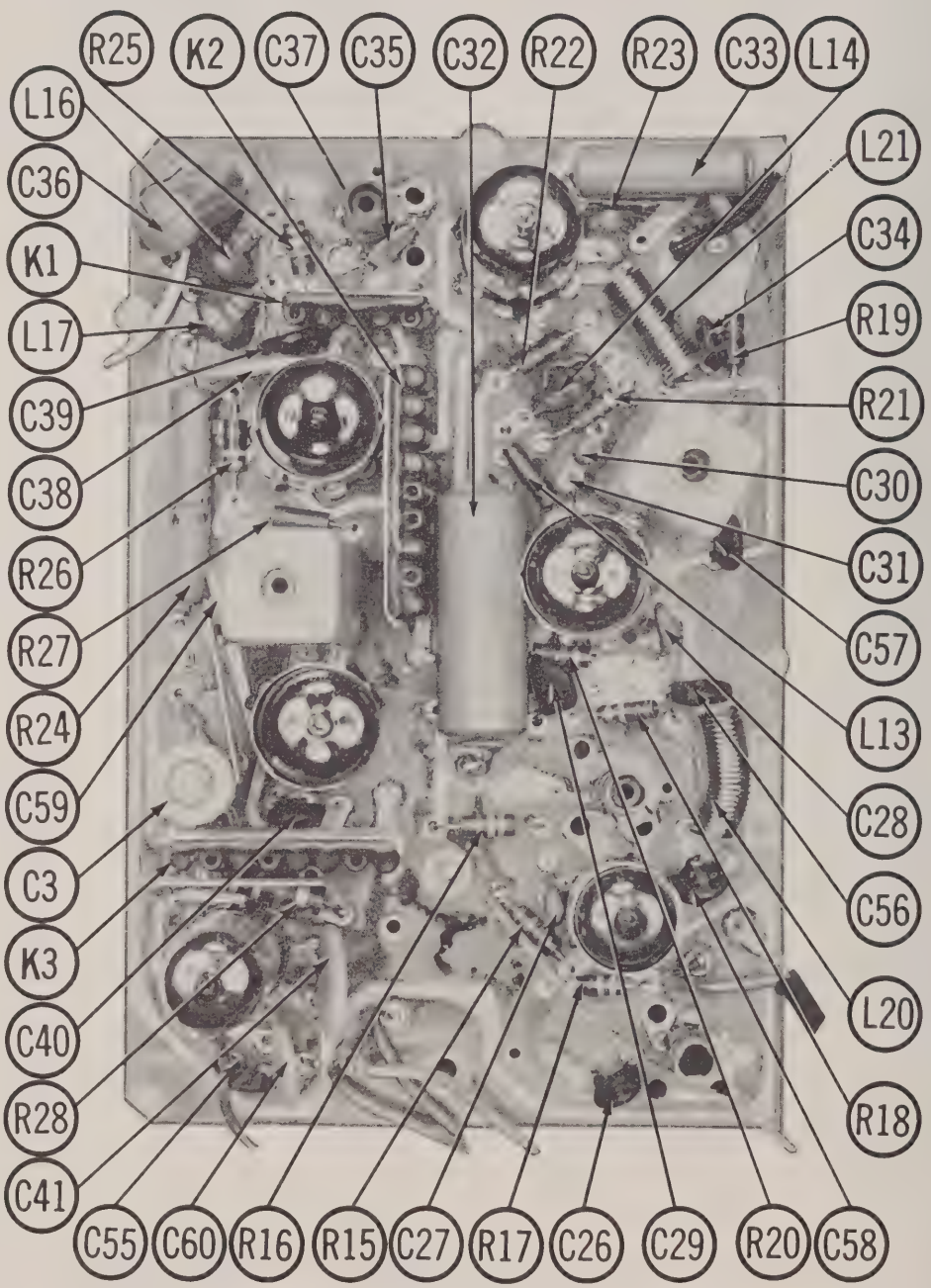
SWEEP FAILURE
No raster, has sound - **V10, V11, V12, V13, V14**
No vertical deflection - **V9**
Poor vert. linearity or foldover - **V9**
Poor horiz. linearity or foldover - **V10, V11, V12**
Narrow picture - **V10, V11, V12, M1, M2**
Vert. off freq. - **V9**
Horiz. off freq. - **V10**

This receiver employs tubes used in a series filament network, an open filament in any tube in the series will cause the set to be inoperative. (See circuit below).



SILVERTONE CHASSIS 528.50060, 62, 63, 64, 65, 66, 67, 70, 71, 73, 74, 75, 528.50120, 21, 23, 24, 26, 40, 42, 43, 45, 50, 52, 53, 54

FOLDER 3



IF, VIDEO, SYNC & SOUND PRINTED BOARD

PROPERTY OF
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DENVER, COLORADO

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

SILVERTONE CHASSIS 528.50060, 62, 63, 64, 65, 66, 67, 70, 71, 73, 74, 75, 528.50120, 21, 23, 24, 26, 40, 42, 43, 45, 50, 52, 53, 54

ALTERNATE TUNER SCHEMATIC

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt bias supply to point Ⓐ. Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.01mfd	High side to pin 2 (grid) of 5AM8 (V4). Low side to chassis.	44.0MC (10MC Swp)	44.0MC	Any non-interfering channel	Vert. Amp. thru 10K to point Ⓑ. Low side to chassis.	A1	Preset A2 fully counter clockwise. Adjust A1 for maximum gain at marker as in Fig. 1.
2.	"	"	"	43.2MC 45.3MC	"	"	A2	Adjust for maximum gain and symmetry of response similar to Fig. 2 with markers as shown.
3.	.001mfd	High side to pin 1 (grid) of 3CB6 (V3). Low side to chassis.	"	44.0MC	"	"	A3	Preset A4 fully counter clockwise. Adjust A3 for maximum gain at marker as in Fig. 1.
4.	"	"	"	43.6MC 45.0MC	"	"	A4	Adjust for maximum gain and symmetry of response similar to Fig. 3 with markers as shown.
5.	Fig. 4	High side to point Ⓒ. thru coupling network (Fig. 4). Low side to chassis.	"	44.0MC	"	"	A5	Detune A6. Adjust sweep generator until about 1 volt above noise level appears on scope. Adjust A5 for maximum gain at 44.0MC.
6.	"	"	"	42.75MC 43.6MC 45.0MC 45.75MC	"	"	A6	Adjust for maximum gain and symmetry of response similar to Fig. 5 with markers as shown. If necessary, retouch A5 to correct 45.75MC region of response and A6 affects 42.75MC region.

SOUND IF ALIGNMENT

Connect two matched 100K (±1%) resistors in series from point Ⓓ to chassis. The junction of these two resistors is alignment point Ⓔ as shown on the schematic.
Use only enough generator output to provide a usable indication on VTVM.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
7.	.01mfd	High side to pin 7 (grid) of 6BH8 (V5). Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	DC probe to point Ⓓ. Common to chassis.	A7, A8, A9	Adjust for maximum deflection.
8.	"	"	"	"	DC probe to point Ⓕ. Common to point Ⓔ.	A10	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

4.5MC TRAP ALIGNMENT

4.5MC beat interference in the picture may be eliminated by misadjusting the fine tuning until the beat pattern is visible in the picture and retouching A7 for MINIMUM 4.5MC beat interference in the picture.

VHF OSCILLATOR ALIGNMENT

Restore the receiver to normal operating condition. Set the channel selector to the highest high band channel (13-7) operating in the area and set the fine tuning to the center of its range. Adjust the high band oscillator slug (A11) for best picture and sound.
Switch channel selector to the highest low band channel (6-2) operating in the area and adjust the low band oscillator slug (A12) for best picture and sound. Recheck high band adjustment.

RF AND MIXER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

UHF TUNER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

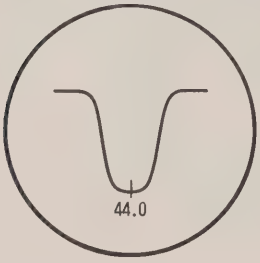


FIG. 1

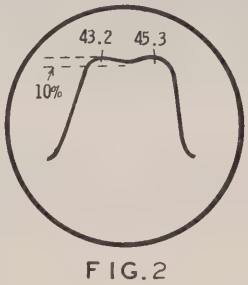


FIG. 2

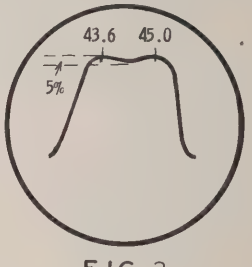


FIG. 3

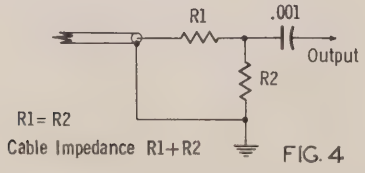


FIG. 4

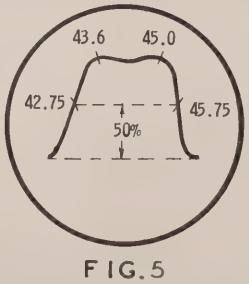
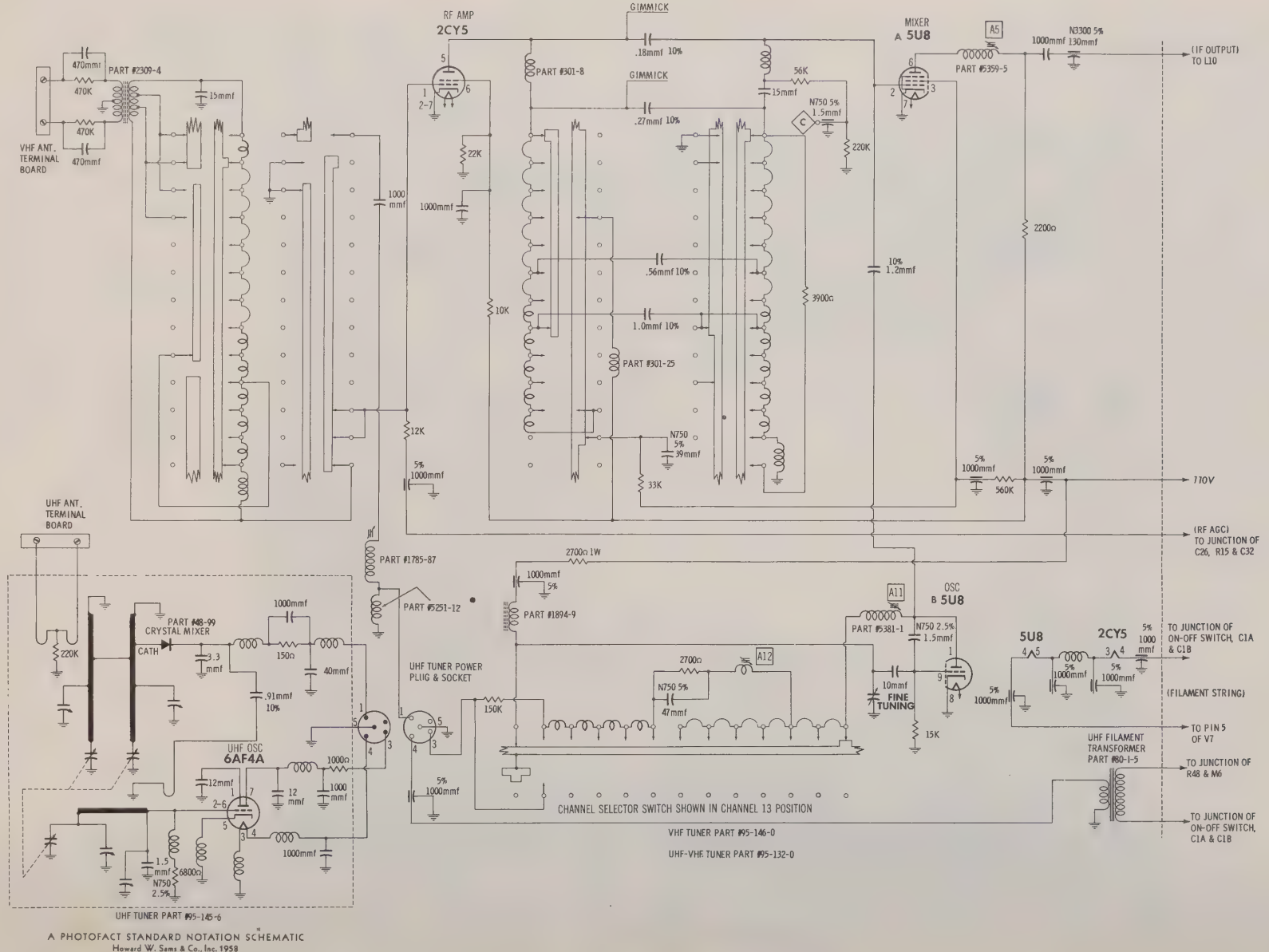


FIG. 5

CHASSIS TOP VIEW



A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

ALTERNATE TUNER SCHEMATIC

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

SILVERTONE CHASSIS 528.50060, 62, 63, 64, 65, 66, 67, 70, 71, 73, 74, 75, 528.50120, 21, 23, 24, 26, 40, 42, 43, 45, 50, 52, 53, 54

ALTERNATE TUNER SCHEMATIC

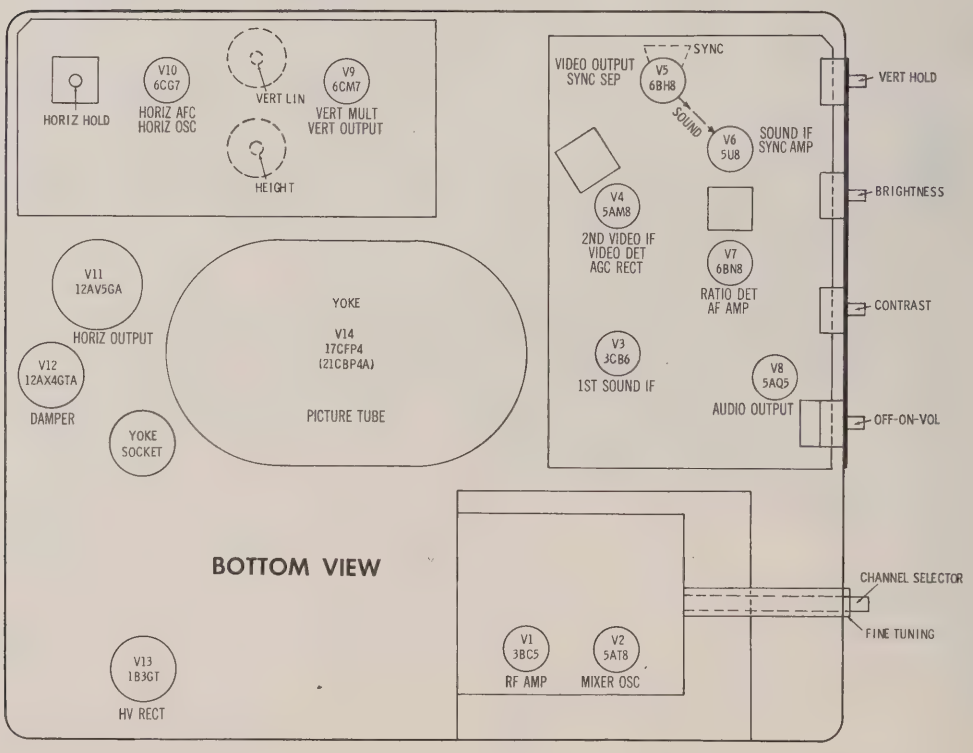
A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

FOLDER 3

RESISTANCE MEASUREMENTS

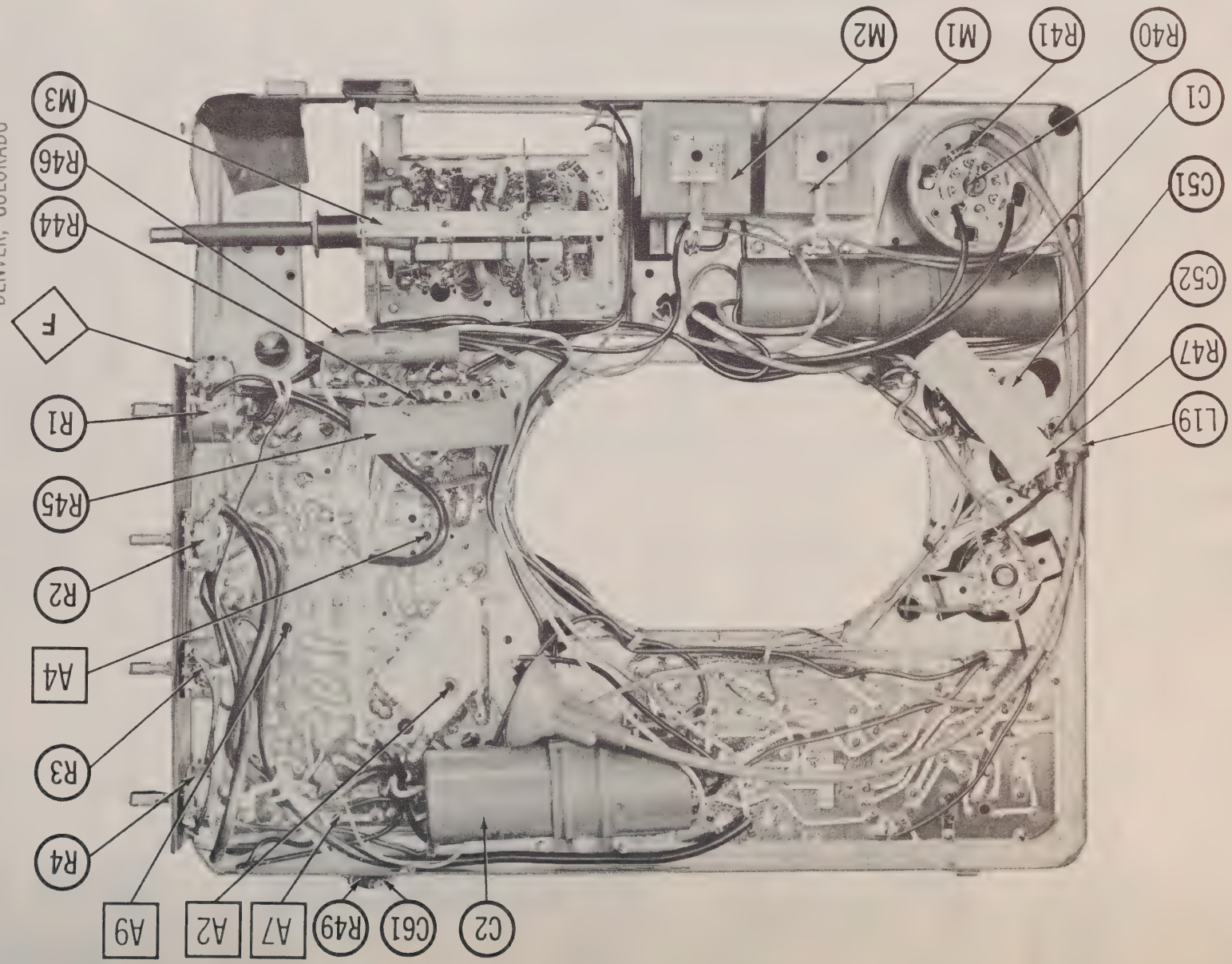
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	3BC5	1meg	0Ω	▲ 0Ω	▲ 1Ω	† 1600Ω	† 1600Ω	0Ω		
V2	5AT8	15K	† 7600Ω	0Ω	▲ 1Ω	▲ 2.5Ω	† 3900Ω	† 2000Ω	0Ω	235K
V3	3CB6	1meg	47Ω	▲ 5Ω	▲ 6Ω	† 1900Ω	† 1900Ω	0Ω		
V4	5AM8	220Ω	.1Ω	† 2600Ω	▲ 6Ω	▲ 7Ω	† 2600Ω	0Ω	5600Ω	0Ω
V5	6BH8	0Ω	2.2meg	† 470K	▲ 8.5Ω	▲ 7Ω	● 50Ω	1meg	† 1600Ω	† 4000Ω
V6	5U8	† 6300Ω	4Ω	† 100K	▲ 5Ω	▲ 4Ω	† 3800Ω	270Ω	3300Ω	† 470K
V7	6BN8	500K	0Ω	500K	▲ 2.5Ω	▲ 4Ω	18K	† 220K	10meg	0Ω
V8	5AQ5	470K	330Ω	▲ 11.5Ω	▲ 10Ω	† 910Ω	† 560Ω	470K		
V9	6CM7	‡ 1800Ω	NC	0Ω	▲ 13Ω	▲ 11.5Ω	● ‡ 3.7meg	● 680K	2.2meg	● 2300Ω
V10	6CG7	† 33K	400K	0Ω	▲ 14.5Ω	▲ 13Ω	† 470Ω	400K	250K	NC
V11	12AV5GA	470K	▲ 17Ω	0Ω	NC	‡ 38Ω	NC	▲ 14.5Ω	† 8200Ω	
V12	12AX4GTA	TP	NC	¶	NC	† 2.4Ω	TP	▲ 17Ω	▲ 21Ω	
V13	1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP ‡ 438Ω
V14	17CFP4	▲ 10Ω	62K	PIN 6 ‡ 18Ω	PIN 10 ‡ 18Ω	PIN 11 ● 600K	PIN 12 ▲ 8.5Ω			

¶ THIS READING CAN VARY GREATLY, (10K MINIMUM), DUE TO THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM 215V SOURCE.
‡ MEASURED FROM PIN 3 OF V12.
▲ MEASURED FROM JUNCTION OF C1A AND C1B.
NC NO CONNECTION
TP TIE POINT



TUBE PLACEMENT CHART

CHASSIS BOTTOM VIEW



PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	TYPE	NOTES
V1	RF Amplifier	3BC5	
V2	Mixer Osc.	5AT8	
V3	1st. Video IF Amp	3CB6	
V4	2nd. Video IF Amp - Video Det. - AGC Rect.	5AM8	
V5	Video Output-Sync Sep.	6BH8	
V6	Sound IF Amp -Sync Amp	5U8	
V7	Ratio Det. -AF Amp.	6BN8	
V8	Audio Output	5AQ5	
V9	Vert. Mult. -Vert Output	6CM7	
V10	Horiz. AFC-Horiz Osc	6CG7	
V11	Horiz Output	12AV6GA	
V12	Damper	12AX4GTA	
V13	HV Rectifier	1B3GT	

PICTURE TUBE

ITEM No	REPLACEMENT DATA: SILVERTONE PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	NOTES
V14	17CYP4 21CBP4A		17CYP4 ① 21CBP4 21CBP4A ①	1- Silver screen "85"

ELECTROLYTIC CAPACITORS

ITEM No	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SILVERTONE PART No.	AEROVOX PART No.	CORNELL DUBILIER PART No.	MALLORY PART No	PYRAMID PART No	SANGAMO PART No	SPRAGUE PART No.	NOTES
C1A	120	150	18-50-5	PR2-050					R2525 *	
B	120	150								
C2A	40	300	18-32-2	PR3-300		WV404			R3325 *	
B	20	300								
C	20	300								
D	20	300								
E	50	50								
C3	4	50	18-25-0	PR5150V4	BBH4-50	TC20	TD-4-50	MT-0504	TVA-1402	
C4	20	300	18-57-5	NP-PR2300V	CBR4035 †	TC78 †	TD-40-350	MT-4540 †	R2449 *	
				20	CBR4035 †	TC78 †	TD-40-350	MT-4540 †		

* Non-catalog item.
† Connect negative leads together.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C5	8		163-809			C10V8C				NPO 10%
C6	1000		344-1	EF-001	MFT-1000				503C-DI	
C7	9		360-909							NPO 10%
C8	8		163-809			C10V8C				
C9	1000		344-1	EF-001	MFT-1000				503C-DI	
C10	.18		2101-188							10%
C11	.18		2101-188							10%
C13	.47		2101-478							10%
C14	6.8		338-689	NPO-DI 6.8	TCZ-6R8	C50V8C	TCO-6.8	ZT-6868	5TCCB-V68	
C24	1000		344-1	EF-001	MFT-1000				503C-DI	
C15	100		353-101			C10Y2C				N3300 10%
C16	3		2101-309							10%
C17	10		165-100							N3300 5%
C18	1.5		171-159	NPO-SI 1.5	TCZ-1R5	C10V15C	TCO-1.5	ZT-5815	5TCCB-V15	
C19	.47		333-470	NTO-DI 47	TCN-47	C10Q47C	TCT-47		5TCU-Q47	N150 10%
C20	1000		2033-23	BPD-001	DD-102	BYA5DI	ED-1000	DC5DI	5HK-DI	
C21	16		353-160							N3300 5%
C22	1000		344-1	EF-001	MFT-1000				503C-DI	
C23	1000		344-1	EF-001	MFT-1000				503C-DI	
C24	1000		2033-23	BPD-001	DD-103	BYA5DI	ED-1000	DC5DI	5HK-DI	
C25	1000		344-1	EF-001	MFT-1000				503C-DI	
C26	3000		15-30217	BPD-002	DD-302	BYA10DI	ED-003	DC5D3	5HK-D2	
C27	680		15-6811		1R5T68	ED-680			MS-3S5	10%
C28	1000		15-10211		1R5D1	ED-1000			MS-2I	
C29	1000		15-10217	BPD-001	DD-103	BYA5DI	ED-1000	DC5DI	5HK-DI	
C30	2.2		20-5-0	NPO-SI 2.2	TCZ-2R2	C10V22C	TCO-2.2		5TCCB-V22	10%
C31	10		30-14-0	NPO-SI 10	DD-100	L10Q1	ED-10	ZT-541	5TCC-Q	10%
C32	33	300	16-33428	P388N-33		CUB2P33		GEM-3032	5TM-P33	
C33	.047	300	16-47338	P388N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C34	1000		15-10217	BPD-001	DD-103	BYA5DI	ED-1000	DC5DI	5HK-DI	
C35	33									N150 10%
C36	.047	400	16-47345	P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C37	33									N150 10%
C38	5000		15-50217	BPD-005	DD-502	BYA10DS	ED-005	DC525	5HK-DS	
C39	2000		15-20217	BPD-003	DD-302	BYA10DI	ED-002	DC523	5HK-D2	
C40	1000		15-10217	BPD-001	DD-103	BYA5DI	ED-1000	DC5DI	5HK-DI	
C41	5000	3000	20-79-0		DD30-502				30HKB-D5	
C42	.0068	600	16-68257					GEM-16268	6TM-P1	10% ③
C43	.0068	600	16-68257					GEM-16268		10%
C44	.1	400	16-10469	P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C45	.047	400	16-47347					GEM-4147		10%
C46	.22	200	16-22458	P388N-22		CUB2P23		GEM-3023	5TM-P22	
C47	375		20-80-0							N750 5% ③
C48	.01	600	20-19-1	P688N-01	D6-10000	CUB6S1	GP-10000	GEM-611	6TM-S1	
C49	1000		17-10219	1464-001		1R5DI	ED-1000	MCB255	MS-3I	10%
C50	.047	400	16-47349	P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C51	100	4000	15-10415							N1400 10% ③
C52	10000		15-10317	BPD-01	DD-103	BYA5SI	ED-01	DC5II	5HK-SI	
C53	68	3000								10% ③
C54	.047	600	20-647-1	P688N-047	DF-503	CUB6S47		GEM-6147	6TM-S47	
C55	1000			BPD-001	DD-103	BYA5DI	ED-1000	DC5DI	5HK-DI	
C56	1000		15-10217	BPD-001	DD-103	BYA5DI	ED-1000	DC5DI	5HK-DI	
C57	1000		15-10217	BPD-001	DD-103	BYA5DI	ED-1000	DC5DI	5HK-DI	
C58	1000		15-10217	BPD-001	DD-103	BYA5DI	ED-1000	DC5DI	5HK-DI	
C59	10000		15-10317	BPD-01	DD-103	BYA5SI	ED-01	DC5II	5HK-SI	
C60	10000		15-10317	BPD-01	DD-103	BYA5SI	ED-01	DC5II	5HK-SI	
C61	5000	1000								④

① In Chassis 528.50062 a .01mfd 600V 10% (Part #16-10357) is used in this application.
② Some versions of chassis 528.50062 may use 350vmad 10% N750 (Part #20-100-0) in this application
③ Chassis 528.50061 and 528.50065 use 130mmf 4000V 10% N400 (Part #15-12415) in this application.
④ Not used in some versions.
⑤ Some versions use 1000mmf 1000VAC (Part #20-94-0) or a part of a component combination (Part #13-17-3).

CONTROLS

ITEM No	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SILVERTONE PART No	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No	INSTALLATION NOTES
R1A	500K	½	24-335-0	B-60-S	A47-500K-2	Q31-153	TA55A	Volume
B	Shaft			Not Req.	Not Req.	Not Req.	Not Req.	
C	Switch			Not Req.	Not Req.	Not Req.	Not Req.	
R2A	500Ω	½	24-78-1	B-4	A47-500-S	Q31-105	TA55L	Contrast
B	Shaft			Not Req.	Not Req.	Not Req.	Not Req.	
R3A	4meg	½	24-364-1	B-86	A47-4meg-S			Brightness
B	Shaft			Not Req.	K28-1			
R4A	1.5meg	½	24-79-1	B-89*	A47-1meg-S*	Q31-137 *	TA55L *	Vert. Hold with 500K stop-Note 1
B	Shaft			Not Req.	K28-3	Not Req.	Not Req.	
R5	5000Ω	½	24-367-1					Vert. Lin.
R6	7meg	½	24-266-1					Height with 330K stop

Note 1. A 1meg (Part #24-108-1) is used in Chassis 528.50062
* Connect a 500K resistor in series with the left hand terminal

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No	RATING: OHMS	RATING: WATT	SILVERTONE PART No.	NOTES
R7	820Ω		106-824	
R8	3900Ω		106-392	
R9	15K		106-153	
R10	220K		106-224	
R11	1800Ω		106-182	
R12	15K		106-153	
R13	5600Ω		106-562	
R14	470Ω		106-471	
R15	6800Ω		60-68301	
R16	330Ω		60-33102	
R17	47Ω		60-47001	
R18	15K		60-15301	
R19	1000Ω		60-10202	
R20	220Ω		60-22101	
R21	5600Ω		60-56201	
R22	1meg		60-10502	
R23	1meg		60-10502	
R24	3500Ω	4	61-412	
R25	180K		60-18401	
R26	100K		60-10401	Note 1
R27	2200Ω		60-22302	
R28	330Ω		60-33101	
R29	2.2meg	1	60-22502	
R30	150K	1	60-15401	
R31	1000Ω		60-10202	
R32	470Ω		60-47102	
R33	560Ω			
R34	560Ω			
R35	160K 5%	1	60-16405	Note 2
R36	6200Ω		60-62201	
R37	270K		60-27401	
R38	8200Ω	2	60-82221	Note 3
R39	180		60-18001	Note 4
R40	2.2Ω		60-22901	Note 5
R41	4700Ω		60-47202	
R43	1000Ω			
R43	470Ω	1	60-47102	
R44	560Ω	1	60-56101	
R45	1600Ω	15	61-11	
R46	200Ω	15	61-41	
R47	4.5Ω	10	61-115	
R48	60Ω	25	61-117	
R49	4.7meg		60-47502	Note 6

Note 1. Some versions may use a 68K (Part #60-68301) in this application.
Note 2. Some versions may use a 180K 1W or 150K 1W in this application.
Note 3. Some versions may use a 6800Ω 2W (Part#60-68321) in this application.
Note 4. Some versions may use a 33Ω in this application.
Note 5. Some versions may use a 2.7Ω (Part #60-27901) in this application
Note 6. Some versions may use a component combination (Part #13-17-3) in this application.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No	USE	REPLACEMENT DATA: SILVERTONE PART No	Halldorson PART No	Merit PART No	Ram PART No	Stancor PART No	Thordarson PART No	Triad PART No	NOTES
T1	Vert. Output	580-1-2-C	Z1807 ①	A-3826①	V31S ①	VO-10① ②	26876	A-119X ②	
	Alt. Vert. Output	80-1-2							
T2A	Yoke-Horiz (21MH)	80-2-48 ③	DF807 ⑤ ⑥ ⑦	MDF-92 ⑥ 7	Y90F19/43 ⑤ ⑤ ⑦	DY-16A ⑦	Y-16 ⑤⑥ ⑦	Y-41 & NW3 ⑦⑤	
B	(90°)-Vert. (39MH)								
	Alt. Yoke	80-2-4 ③							
	Alt Yoke	80-5-4 ④ ③							
T3	Horiz. Output	C80-1-3B							
	Alt. Horiz. Output	80-1-3							
	Alt. Horiz. Output	80-3-3 ④							

① Cut and tape blanking lead.
② Drill new mounting hole(s).
③ Includes yoke plug and centering device.
④ Used in Ch. 528.50062.
⑤ Connect horizontal damping network across yoke terminals #3 and #7.
⑥ Use original horizontal damping network, if necessary.
⑦ Jumper yoke terminals #1 and #6. Connect to pin #5 of yoke plug. Connect yoke terminal #3 to pin #7 and yoke terminal #4 to pin #3 of yoke plug. Use original rear cover and centering device and width sleeve.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI	IMPEDANCE: SEC	REPLACEMENT DATA: SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T4	6200Ω	3-4Ω	80-22-1	Z1110	A-3026	A-3877 ①	24548	S-6X	① Drill new mounting hole.

SPEAKER

ITEM No	TYPE: SIZE	TYPE: FIELD	TYPE: V. C. IMP	REPLACEMENT DATA: SILVERTONE PART No.	QUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	33-288-4 ①	4A07	① Used in Models 8100BE, GR, 8101BE, 8104CH, 8104CO, 8105CH, 8105CO, 8106, 8107
	4"	PM	3-4Ω	33-267-4 ②		② Used in Models 8110, 8111, 8112, 8113
	4"	PM	3-4Ω	33-324-4 ③		③ Used in Models 8103MG, CL, YL, 8103AQ, CL, YL
	5"	PM	3-4Ω	33-258-4 ④		④ Used in Model 8150, 8151, 8152, 8153

COILS (RF-IF)

ITEM No.	USE	SILVERTONE PART No.	NOTES
L1	Ant. Input Trans.	2366-1	
L2	Ant. Coil	310-9	Channel 13
L3	Ant. Coil	310-9	Channel 13
L4	RF Coil	300-14	Channel 13
L5	Mixer Grid Coil	301-6	Channel 13
L6	Osc. Coil	53H-13	Channel 13
L7	Osc. Coil	53H-14	Channel 8
L8	Osc. Coil	310-7	Channel 13
L9	Mixer Plate Coil	310-8	

ITEM No	USE	REPLACEMENT DATA: SILVERTONE PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L10	1st. Video IF	10-14-3					
L11	2nd. Video IF	10-15-3					
L12	3rd. Video IF	10-17-3					
L13	Resonant Choke	10-65-1					12 Microhenries
L14	Series Peaking Coil	10-54-1	19-4060	TV-193	6110		60 Microhenries
L15A	4.5MC Trap	10-120-1					
B	Sound IF						
L16	Series Peaking Coil	10-86-1	19-3260 *	TV-196 *	6130 *	VP-6 *	270 Microhenries, wound on 15K resistor
L17	Shunt Peaking Coil	10-86-1	19-3260	TV-196	6130	VP-6	269 Microhenries
L18	Ratio Det.	10-21-0			6305-PC		
L19	RF Choke	10-128-1	19-3250	TV-195	6130	VP-6	270 Microhenries
L20	Fil. Choke	10-133-1	19-1003	BC-563	4606		2.3 Microhenries
L21	Fil. Choke	10-133-1	19-1003	BC-563	4606		2.3 Microhenries

* Parallel with 15K resistor

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.: PRI.	DC RES.: SEC.	REPLACEMENT DATA: SILVERTONE PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordarson PART No.	NOTES
L22	700 *		10-121-1 ①						Waveform coil - 40Ω * Tapped @ 50Ω

① Part #10-11-5, 10-143-1, or 10-13-5 may be used in some versions.

COMPONENT COMBINATIONS

ITEM No	USE	DESCRIPTION	SILVERTONE PART No.	REPLACEMENT DATA	
K1	Sync Coupling	6500mmf, 150mmf 10%, N1500, 22K, 470K, 3.3meg	13-8-5	Erie Sprague	708-03 R-8182
K2	De-Emphasis	680mmf 10%, 5000mmf, 5000mmf, 22K, 220Ω, 33000, 470K, 270Ω, 4700Ω	13-8-6	Erie	708-08
K3	Audio Coupling	5000mmf, 10000mmf, 5000mmf, 220K, 18K, 470K, 10meg	13-10-5 ①	Erie	706-09
K4	Vert. Integrator	5000mmf, 10000mmf, 5000mmf, 5000mmf, 5000mmf, 47K, 18K, 33K, 47K, 22K, 68K	13-12-5 ②	Erie	713-01
K5	Horiz. Coupling	5000mmf, 27mmf 10%, 8000mmf, 8000mmf, 8000mmf, 47mmf 10%, 470K, 18K, 15K, 330K, 100K, 470K, 330K, 5200Ω	13-11-5 ③	Erie	715

① Chassis 528.50062, 63, 64 use alternate part #13-16-5 in this application.
② In Chassis 528.50065 this coupler consists of: 10000mmf, 10000mmf, 5000mmf, 5000mmf, 47K, 15K, 33K, 47K, 22K and 68K.
Chassis 528.50062, 63, 64 use part #13-17-5 consisting of: 5000mmf, 5000mmf, 5000mmf, 5000mmf, 47K, 15K, 33K, 47K, 22K, and 68K.
③ In Chassis 528.50062, 63, 64 this coupler consists of: 5000mmf, 27mmf 10%, 8000mmf, 8000mmf, 220mmf 10%, 47mmf 10%, 680K, 18K, 15K, 330K, 100K, 470K, 330K and 5200Ω

RECTIFIERS

ITEM No.	RATING: CURRENT (Measured)	REPLACEMENT DATA: SILVERTONE PART No.	FEDERAL PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	NOTES
M1	220A	83-828 ①	1090A ①	IN007 ②	RS300 ①	300 ①	① Selenium type.
M2	220A	83-829 ①	1090A ①	IN007 ②	RS300 ①	M500 ③ 300 ① M500 ③	② Germanium type. ③ Silicon type.

MISCELLANEOUS

ITEM No	PART NAME	SILVERTONE PART No.	NOTES
M3	Tuner	95-130-0	VHF - Used in Chassis 528.50060, 62, 63, 64, 65, 66, 67, 68
	Tuner	95-132-0	UHF/VHF - Includes VHF tuner #95-146-0 and UHF tuner #95-145-0. Used in Chassis 528.50070, 71, 73, 74, 75, 76
	Tuner	95-134-0	VHF - Used in Chassis 528.50120, 121, 123, 124, 126, 127
	Tuner	95-129-0	VHF - Used in Chassis 528.50140, 142, 143, 145, 146
	Tuner	95-131-0	UHF/VHF - Includes VHF tuner #95-144-0 and UHF tuner #95-143-0. Used in Chassis 528 50150, 153, 153, 154, 155
M4	Width Device	83-1052	
M5	Centering Device	83-936	Includes yoke cover
	Centering Device	83-1054 *	Includes yoke cover
M6	Circuit Breaker	43-1-2	
	Circuit Breaker	43-2-2 *	
	Magnet	27-66-2	Beam Aligner - Used with some picture tubes
	Printed Board	54-4031	IF, Sync, Sound (Does not include tubes)
	Printed Board	54-4032	Horiz. & Vert. (Does not include tubes)

* Alternate part numbers.

SILVERTONE CHASSIS 528.50060, 62, 63, 64, 65, 66, 67, 70, 71, 73, 74, 75, 528.50120, 21, 23, 24, 26, 40, 42, 43, 45, 50, 52, 53, 54

FOLDER 3

PARTS LIST AND DESCRIPTIONS (Continued)

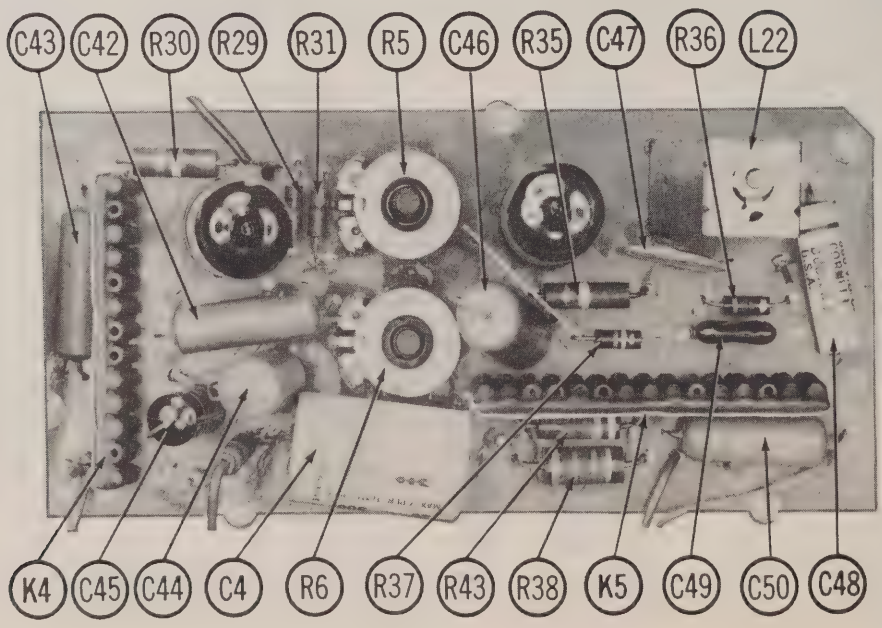
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

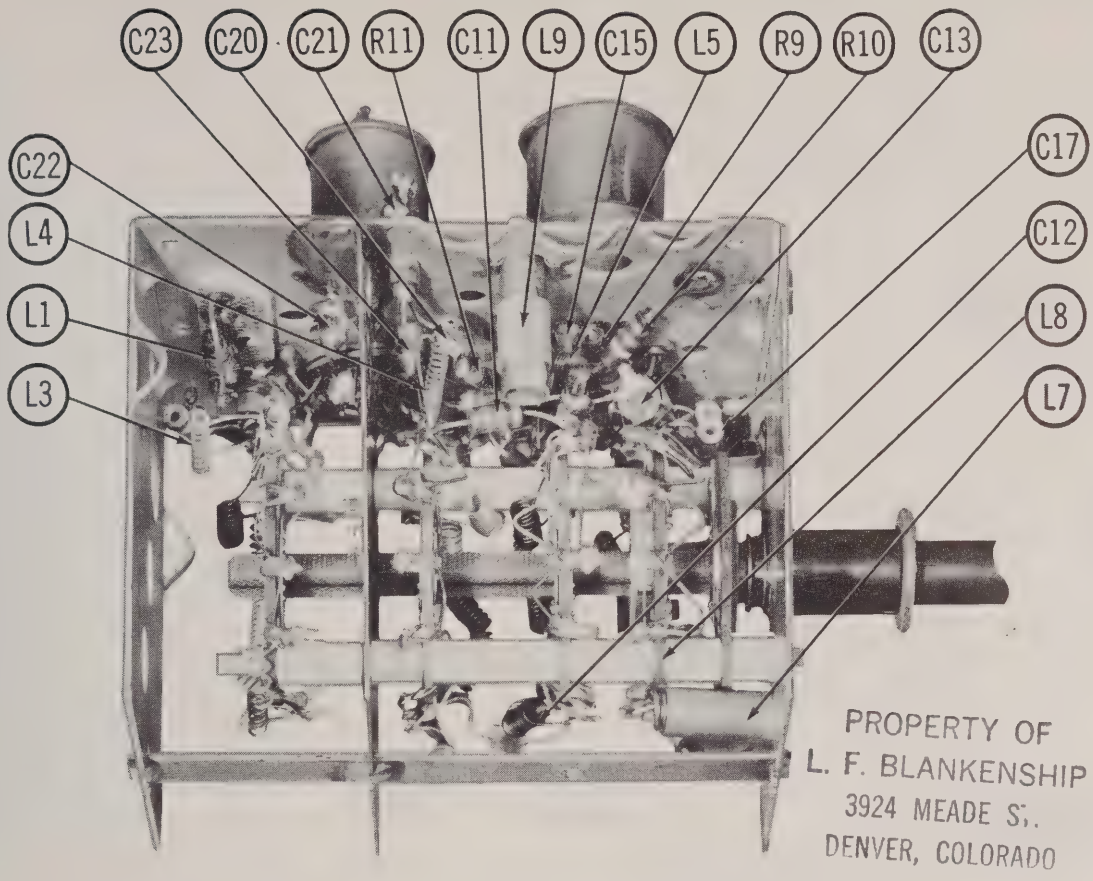
NAME	PART NO.	DESCRIPTION
Safety Glass	48-137-0	Models 8100BE, GR, 8101BE, 8102AQ, CL, YL, 8103AQ, YL, 8104CH, CO, 8105CH, CO, 8106, 8107
Safety Glass	48-140-0	Models 8110, 8111, 8112, 8113, 8150, 8151, 8152, 8153
Bezel	40-6-5	Models 8100BE, GR, 8101BE
Bezel	40-5-5	Models 8102AQ, CL, YL, 8103AQ, YL
Bezel	40-4-5	Models 8104CH, CO, 8105CH, CO, 8106, 8107
Bezel	40-7-5	Models 8110, 8111, 8112, 8113, 8150, 8151, 8152, 8153
Dial	52-906-0	UHF Channel Indicator - Model 8101BE
Dial	52-885-0	UHF Channel Indicator - Models 8103AQ, YL
Dial	52-870-0	UHF Channel Indicator - Models 8105CH, CO, 8107
Dial	52-898-0	UHF Channel Indicator - Models 8111, 8113, 8151, 8153
Knob	52-901-0	Channel Selector - Models 8100BE, GR
Knob	52-907-0	VHF Channel Selector - Model 8101BE
Knob	52-890-0	Channel Selector - Models 8102AQ, CL, YL
Knob	52-889-0	VHF Channel Selector - Models 8103AQ, YL
Knob	52-871-0	Channel Selector - Models 8104CH, CO, 8106
Knob	52-872-0	VHF Channel Selector - Models 8105CH, CO, 8107
Knob	52-897-0	Channel Selector - Models 8110, 8112, 8150, 8152
Knob	52-896-0	VHF Channel Selector - Models 8111, 8113, 8151, 8153
Knob	52-680-0	UHF Channel Selector - Model 8101BE
Knob	52-888-0	UHF Channel Selector - Models 8103AQ, YL
Knob	52-886-0	UHF Channel Selector - Models 8105CH, CO, 8107, 8111, 8113, 8151, 8153
Knob	52-902-0	Fine Tuning - Models 8100BE, GR
Knob	52-905-0	VHF Fine Tuning - Model 8101BE
Knob	52-887-0	Fine Tuning - Models 8102AQ, CL, YL
Knob	52-884-0	VHF Fine Tuning - Models 8103AQ, YL
Knob	52-869-0	Fine Tuning - Models 8104CH, CO, 8106, 8110, 8112, 8150, 8152
Knob	52-868-0	VHF Fine Tuning - Models 8105CH, CO, 8107, 8111, 8113, 8151, 8153
Knob	52-864-0	Off-On-Volume
Knob	52-863-0	Brightness
Knob	52-862-0	Vert. Hold
Knob	52-861-0	Contrast
Cabinet	42-9-0	Models 8100BE, 8101BE
Cabinet	42-10-0	Model 8100GR
Cabinet	42-45-0	Models 8104CH, 8105CH
Cabinet	42-46-0	Models 8104CO, 8105CO
Cabinet	42-11-0	Models 8106, 8107
Cabinet	42-25-0	Models 8110, 8111
Cabinet	42-26-0	Models 8112, 8113
Cabinet	42-27-0	Models 8150, 8151
Cabinet	42-28-0	Models 8152, 8153
Handle	49-173	Models 8100BE, GR, 8101BE
Handle	49-186	Models 8102AQ, CL, YL, 8103AQ, YL
Handle	49-243	Models 8104CH, CO, 8105CH, CO
Leg	49-192	Models 8150, 8151
Leg	49-193	Models 8152, 8153

WIRING DATA

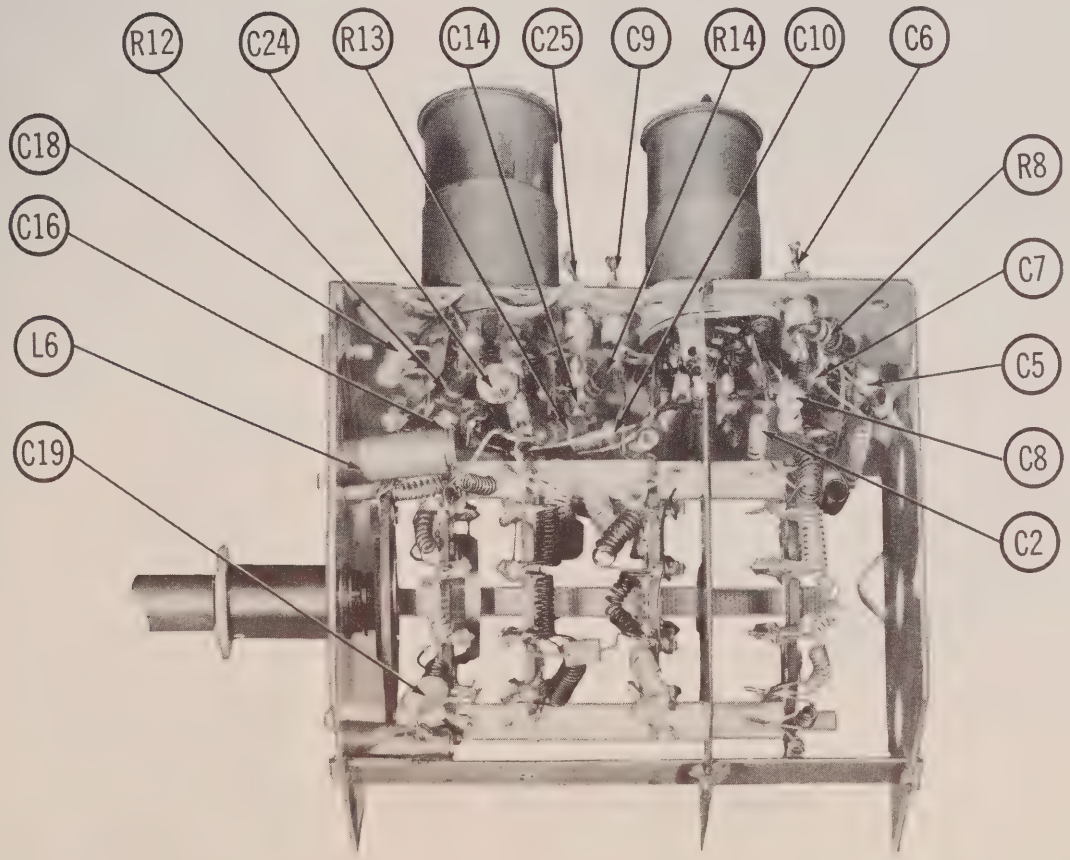
High Voltage Lead	Use BELDEN No.	8869
Shielded Hook-up Wire	Use BELDEN No.	8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No.	8874
300Ω Tuner Input Lead	Use BELDEN No.	8225
300Ω Antenna Lead-in	Use BELDEN No.	8230 or 8275
Antenna Rotor Cable	Use BELDEN No.	8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor



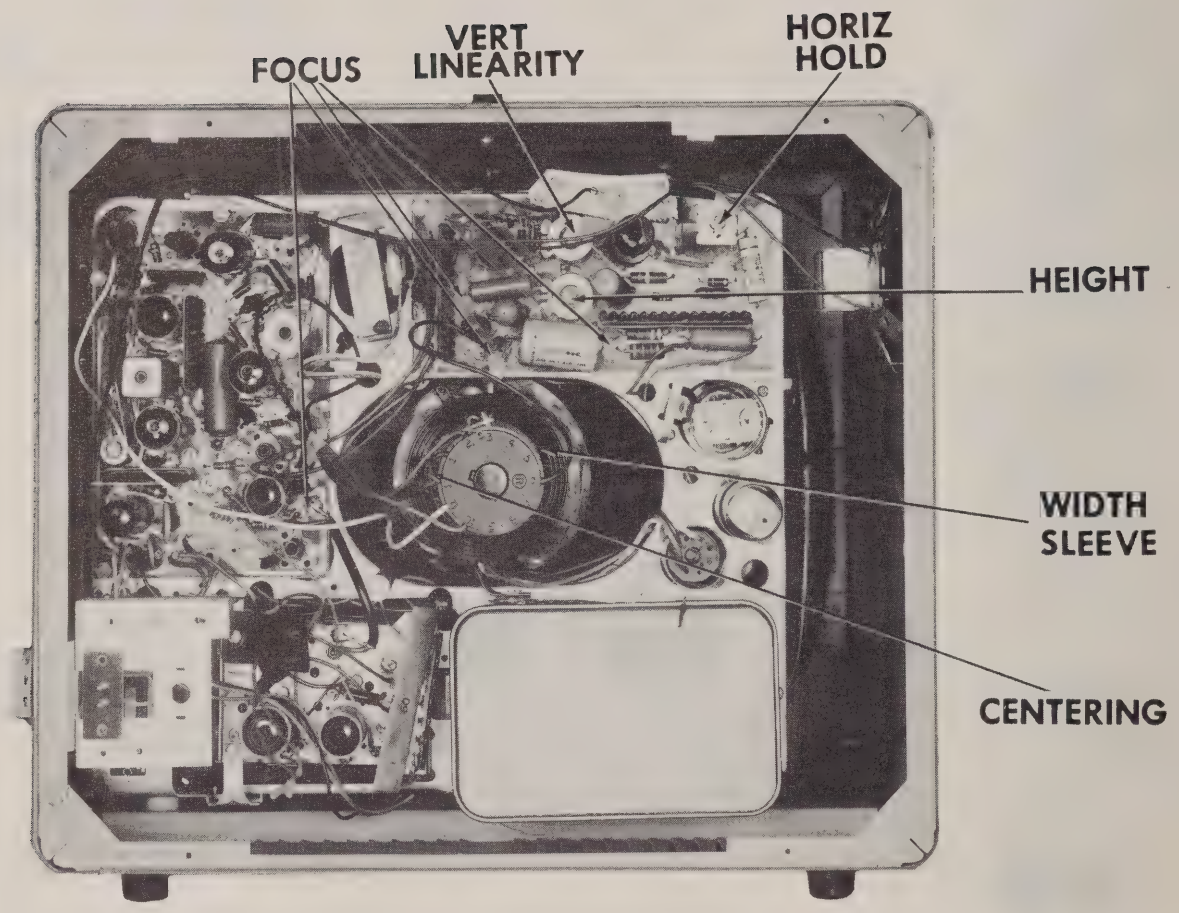
SWEEP PRINTED BOARD



RF TUNER-LEFT SIDE



RF TUNER-RIGHT SIDE



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern.

Adjust the horizontal hold until the picture is synchronized horizontally.

If the picture cannot be synchronized with the horizontal hold, turn the horizontal waveform slug (B1) several turns counter clockwise from its original position and readjust the horizontal hold until the picture synchronizes horizontally.

Connect the vertical amplifier of the scope thru a low capacity probe to point ◇G◇ . Low side to chassis. Adjust horizontal waveform slug (B1) until the waveform is similar to Fig. 6 with sharp peak 10% higher than the broad round peak. During this adjustment, keep the picture in sync with the horizontal hold. Remove the scope connection. If necessary, readjust the horizontal hold until the picture is synchronized horizontally.

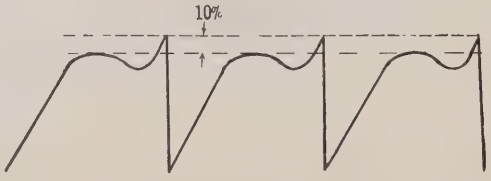


FIG. 6

SYLVANIA MODELS 21C407, 408, 409, 512, 513 Series, 21P101 Series, 21T113, 114, 115, 213 Series (Ch. 1-539-1, -2, 1-540-1, -2, -3, -4)

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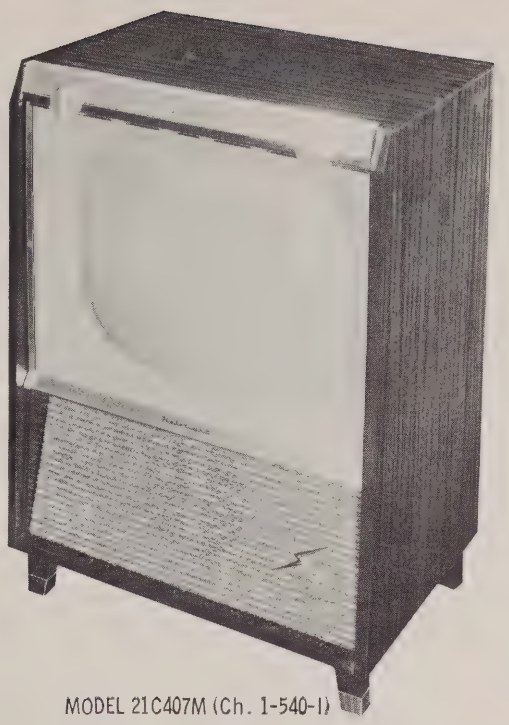


MODEL 21C407M (Ch. 1-540-1)

CAUTION NOTE

ONE SIDE OF AC LINE CONNECTED TO CHASSIS
Care should be exercised when connecting test equipment or physically contacting the chassis.

TRADE NAME	Sylvania	MODELS	CHASSIS
		21C409 Series, 21P101 Series, 21T113 Series	1-539-1, -2
		21C407 Series, 21C512 Series, 21C513 Series, 21T114 Series, 21T213 Series	1-540-1, -2
		21C408 Series, 21T115 Series	1-540-3, -4
MANUFACTURER	Sylvania Electric Prod., Inc., Radio & Television Div., 700 Ellicott St., Batavia, N.Y.		
TYPE SET	Television Receiver		
TUBES	Sixteen		
POWER SUPPLY	110-120 Volts AC, 60 Cycle	RATING 170 Watts, 1.5 Amp. @ 117 Volts AC	
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)		

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF oscillator is possible by removing the channel selector and fine tuning knobs. Set the fine tuning at the center of its range. One slug for HIGH band adjustment is located at 1 o'clock, and should be adjusted first. The LOW band adjustment is located at 9 o'clock. Adjust for best picture and sound.

SPECIAL ADJUSTMENTS

A. AGC
Turn the AGC control fully clockwise, then counter clockwise approximately 1/4 turn. Adjust picture to lock in with hold controls. If picture jitters, tears, etc., adjust AGC counter clockwise until stable. Readjust hold controls and check operation on all channels in the area.

B. Focus
Some versions use a focus strap on the base of the picture tube. Connect the strap between pins 6 and 7 or 6 and 5 for best focus.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

The horizontal frequency coil is used as the horizontal hold control. Adjust the horizontal hold until the picture synchronizes horizontally. (For location, see tube placement chart).

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the ratio detector secondary (A8) located on top of chassis.

FUSES

Some versions may use a 4" length of #24 wire or a 2 Amp. fuse for LV power supply protection.

FUSE DEVICE

Some versions may use a 4.7Ω fusible resistor (R91) for LV power supply protection. (For location, see tube placement chart).

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

PIN CUSHION CORRECTION

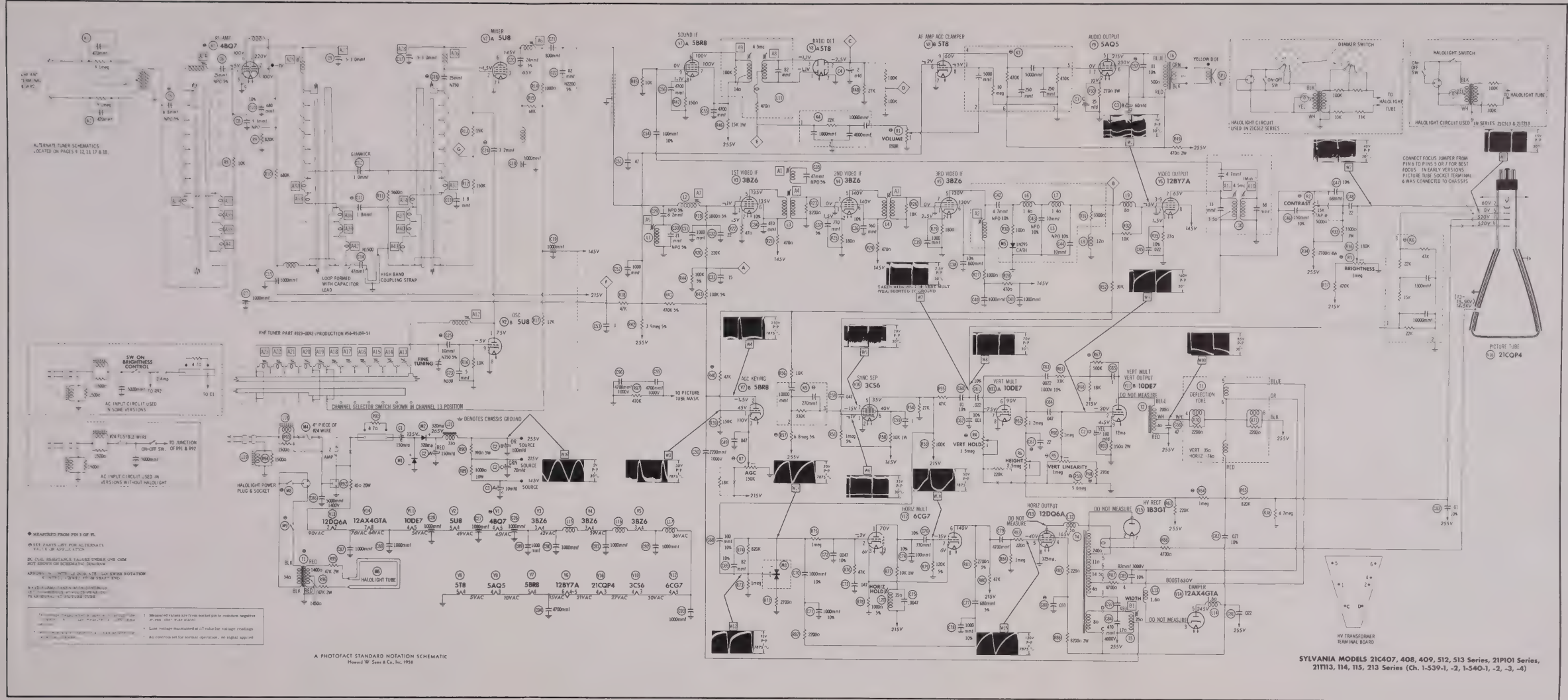
Reduce the picture size so that the sides of the raster are visible; position the 2 magnets so that all sides are straight.

SYLVANIA MODELS 21C407, 408, 409, 512, 513 Series, 21P101 Series, 21T113, 114, 115, 213 Series (Ch. 1-539-1, -2, 1-540-1, -2, -3, -4)

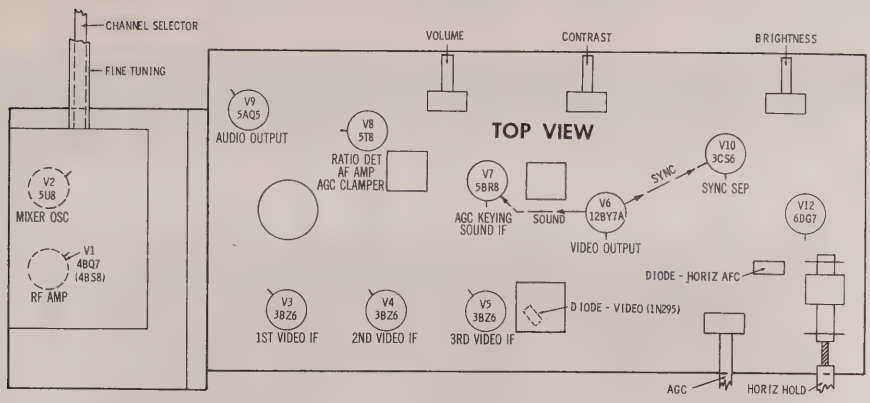
HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

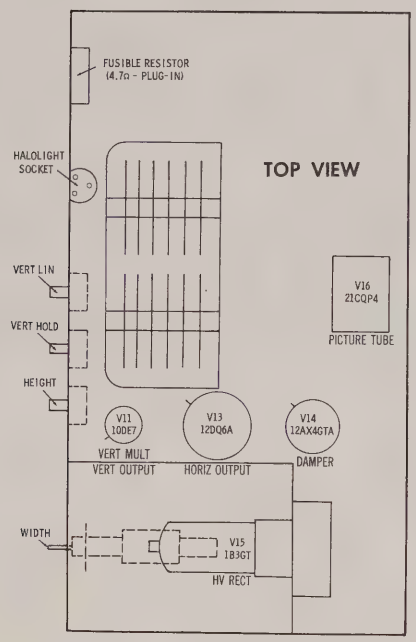
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of H322

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1958 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America


SYLVANIA MODELS 21C407, 408, 409, 512, 513 Series, 21P101 Series, 211113, 114, 115, 213 Series (Ch. 1-539-1, -2, 1-540-1, -2, -3, -4)
A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958
ALTERNATE TUNER SCHEMATICS LOCATED ON PAGES 9 12, 11, 17 & 18.
VHF TUNER PART #323-0092 (PRODUCTION #54-9509-5)
CHANNEL SELECTOR SWITCH SHOWN IN CHANNEL 13 POSITION
SW ON BRIGHTNESS CONTROL
AC INPUT CIRCUIT USED IN SOME VERSIONS
AC INPUT CIRCUIT USED IN VERSIONS WITHOUT HALOLIGHT
#24 FLS/BLU WIRE
TO JUNCTION ON-OFF SW. OF R91 & R92
4" PIECE OF #24 WIRE
HALOLIGHT POWER PLUG & SOCKET
HALOLIGHT TUBE
DENOTES CHASSIS GROUND
SIG AMP 4BQ7
MIXER 5U8
OSC 5U8
SOUND IF 5BR8
RATIO DET 5T8
AF AMP AGC CLAMPER 6T8
AUDIO OUTPUT 5AQ5
1ST VIDEO IF 3BZ6
2ND VIDEO IF 3BZ6
3RD VIDEO IF 3BZ6
VIDEO OUTPUT 12BY7A
AGC KEYING 5BR8
SYNC SEP 3CS6
VERT MULT 10DE7
VERT MULT VERT OUTPUT 10DE7
HORIZ MULT 6CG7
HORIZ OUTPUT 12DQ6A
HV RECT 1B3GT
DAMPER 12AX4GTA
DIMMER SWITCH
HALOLIGHT SWITCH
HALOLIGHT CIRCUIT USED IN 21C512 SERIES
HALOLIGHT CIRCUIT USED IN SERIES 21C513 & 211213
CONNECT FOCUS JUMPER FROM PIN 8 TO PINS 5 OR 7 FOR BEST FOCUS. IN EARLY VERSIONS PICTURE TUBE SOCKET TERMINAL 6 WAS CONNECTED TO CHASSIS
PICTURE TUBE 21CQP4
HV TRANSFORMER TERMINAL BOARD
CONTRAST
BRIGHTNESS
VOLUME
VERT HOLD
HEIGHT
VERT LINEARITY
HORIZ HOLD
WIDTH
BOOST 630V
DO NOT MEASURE
TAKEN WITH 100K Ω VOM (VOLT OHMMETER) FROM VIDEO OUTPUT PLATE TO CHASSIS GROUND
TAKEN WITH 100K Ω VOM FROM VIDEO OUTPUT PLATE TO CHASSIS GROUND
12DQ6A 12AX4GTA 10DE7 5U8 4BQ7 3BZ6 3BZ6 3BZ6
5T8 5AQ5 5BR8 12BY7A 21CQP4 3CS6 6CG7

TUBE PLACEMENT CHART





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TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

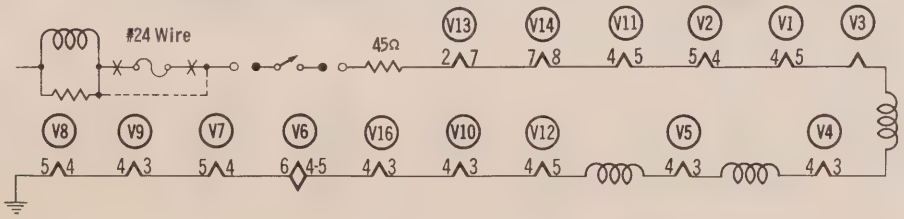
POWER SUPPLY FAILURE
No raster, no sound - **Fuse Wire (M4), Fusible Resistor (R91), Rectifier (M1, M2)**

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V3, V4, V5, Diode (M5), V6**
No pic, no sound, has snow - **V1, V2, V3**
No pic, has sound, has raster - **V6, V16**
Has pic, no sound - **V7, V8, V9**
Overloaded picture - **V7**

SYNC FAILURE
No vert. sync - **V10**
No horiz. sync - **V10, Rectifier (M3)**
No vert. or horiz. sync - **V10**

SWEEP FAILURE
No raster, has sound - **M3, V12, V13, V14, V15, V16**
No vertical deflection - **V11**
Poor vert. linearity or foldover - **V11**
Poor horiz. linearity or foldover - **V12, V13, V14**
Narrow picture - **V12, V13, V14, M1, M2**
Vert. off freq. - **V11**
Horiz. off freq. - **V12**

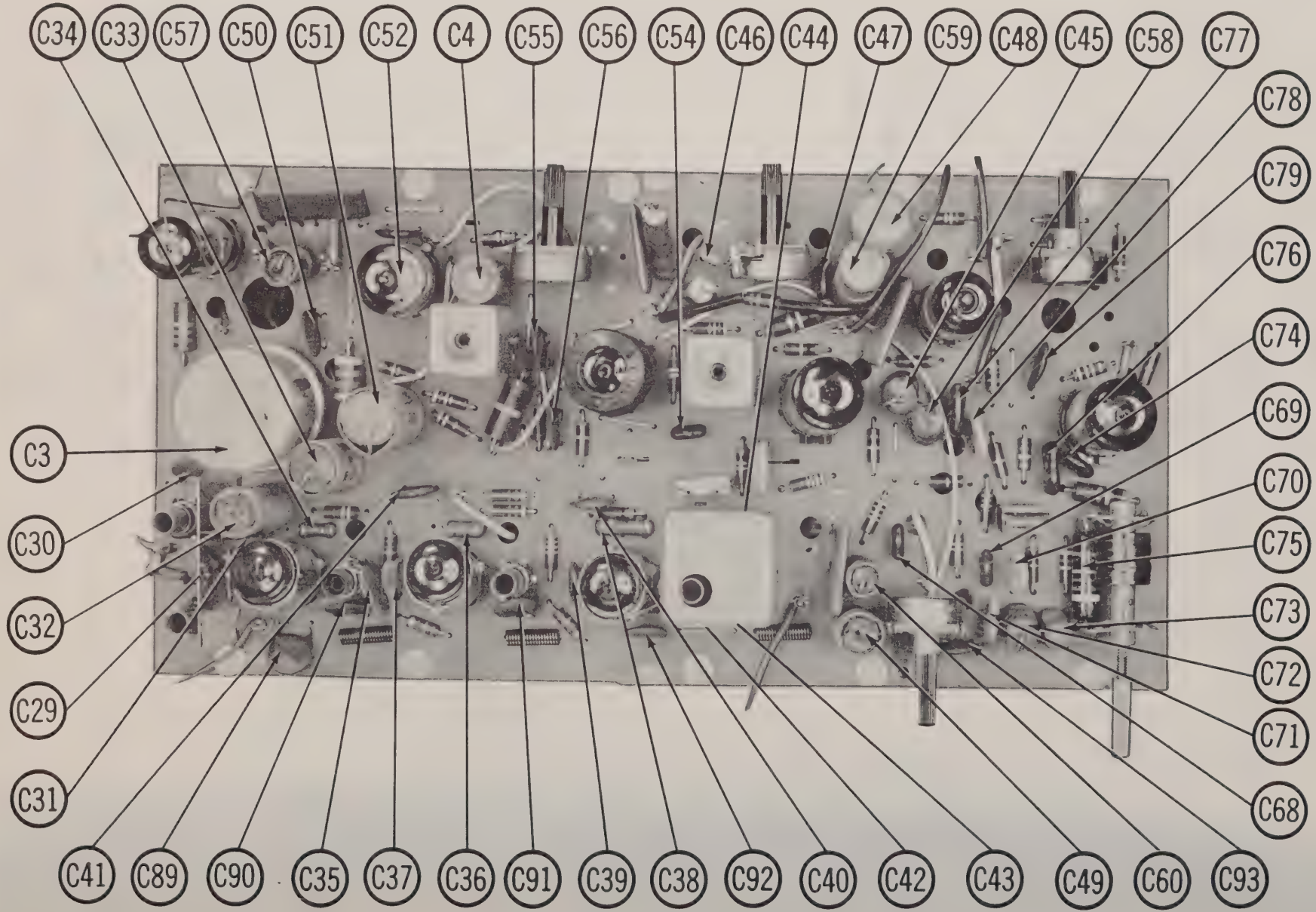
This receiver employs tubes used in a series filament network, an open filament in any tube in the series will cause the set to be inoperative. (See circuit below).



SET 389 FOLDER 4

SYLVANIA MODELS 21C407, 408, 409, 512, 513 Series, 21P101 Series, 21T113, 114, 115, 213 Series (Ch. 1-539-1, -2, 1-540-1, -2, -3, -4)

FOLDER 4



CAPACITOR IDENTIFICATION

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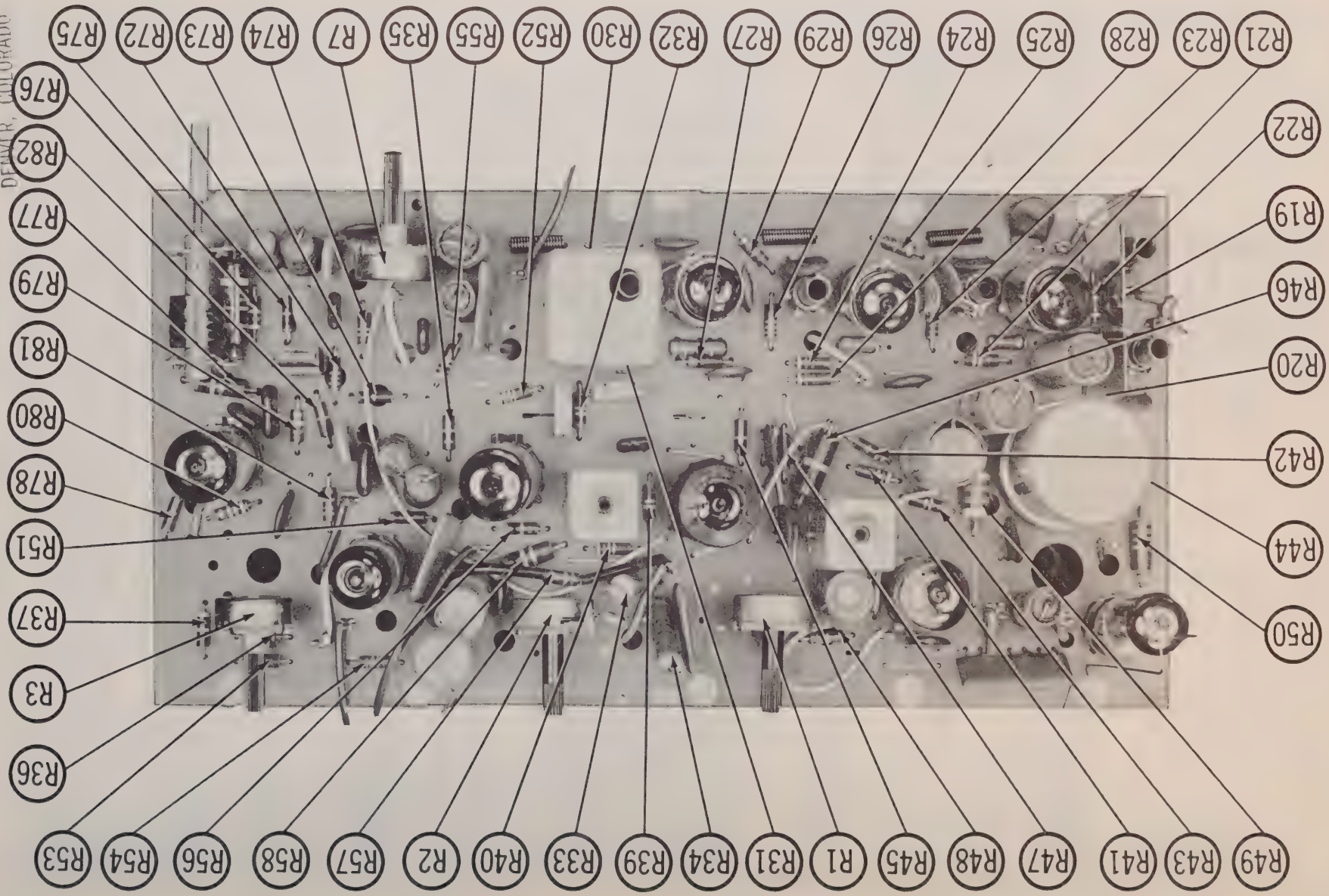
RESISTOR IDENTIFICATION



ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
The high voltage lead should be securely taped and kept away from the chassis.

VIDEO IF ALIGNMENT

Connect the negative lead of a 9 volt bias supply to point Ⓐ . Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.0047 MFD	High side to pin 1 (grid) of the 3BZ6 (V3). Low side to chassis.	43.5MC	41.25MC	Any non-interfering channel	Vert. Amp. thru 33K to point Ⓑ . Low side to chassis.	A1	Adjust sweep generator to provide 3 volts peak to peak on scope. Adjust A1 to place 41.25MC in trap notch. (See Fig. 1).
2.	"	"	"	44.0MC	"	"	A2	Adjust for maximum response at the marker.
3.	"	"	"	45.3MC	"	"	A3	"
4.	"	"	"	42.7MC	"	"	A4	"
5.	"	"	"	41.25MC 42.6MC 45.75MC	"	"		Check for response similar to Fig. 1 with markers as shown. If necessary, retouch A2 thru A4 for desired response. A2 will remove the tilt, A3 to position the 45.75MC marker and A4 to position the 42.6MC marker.
6.	"	"	"	47.25MC	"	"	A5	Adjust for MINIMUM response at 47.25MC marker. Repeat steps 1 thru 6.
7.	Direct	Place thin insulated metal strip between the mixer-osc. tube (V2), and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	"	41.25MC 42.6MC 45.75MC 47.25MC	"	"	A6, A7	Adjust for maximum gain and symmetry of response similar to Fig. 2 with markers as shown.

SOUND IF ALIGNMENT

Connect the negative lead of 45 volt bias supply to point Ⓐ . Positive to chassis.
Set the contrast control fully clockwise and the brightness control fully counter clockwise.
Connect a series tuned 4.5MC circuit between pin 2 (cathode) of picture tube and chassis.
Connect two matched 100K (±1%) resistors in series from point Ⓒ to chassis. The junction of these two resistors is alignment point Ⓓ as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
8.	.001MFD	High side to point Ⓑ . Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	DC probe thru 100K to point Ⓔ . Common to point Ⓓ .	A8, A9, A10, A11	Adjust for maximum deflection. Use peaks resulting in greatest separation of cores.
9.	"	"	"	"	Thru RF probe across coil of series tuned 4.5MC circuit.	A11	Adjust for MINIMUM deflection.
10.	"	"	"	"	DC probe thru 100K to point Ⓔ . Common to point Ⓓ .	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

VHF OSCILLATOR ALIGNMENT

Connect the negative lead of a 3.5 volt supply to point Ⓐ . Positive to chassis.
Keep all exposed "Hot" leads of sweep generator and marker generator as short as possible.
Connect a clip lead from pin 5 (grid) of the 12DQ6A (V13) to pin 2 (grid) of the 10DE7 (V11). Connect the negative lead of a 25 volt bias supply to one of these two grids. Connect the positive lead to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. thru 47K to point Ⓑ . Low side to chassis.	A12	Adjust to place sound marker in trap notch as in Fig. 3. Video marker should fall at 50%. Some tuners do not have adjustments for each channel. Adjust the slugs that are provided.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A13	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A14	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A15	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A16	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A17	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A18	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A19	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A20	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A21	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A22	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A23	

ALIGNMENT INSTRUCTIONS (cont)

VHF RF AND MIXER ALIGNMENT FOR ALL TUNERS EXCEPT #54-95362-1

Leave the 25 volt bias supply connected as under "VHF Oscillator Alignment".
Connect the negative lead of 3.5 volt bias supply to point (F). Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
12.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 33K to point (G). Low side to chassis.	A24, A25, A26	Adjust A24 for maximum response amplitude. Adjust A25 and A26 for symmetrical double peaked response similar to Fig. 4.
13.	"	"	177MC	175.25MC 179.75MC	7	"	A27, A28	Adjust for maximum gain and symmetry of response similar to Fig. 4 with markers as shown. Repeat step 12.
14.	"	"	207MC	205.25MC 209.75MC	12	"		Check for response similar to Fig. 4. If markers fall below 70% on any channel, make compromise adjustments of A24 and A28 with channel switch set to that channel. Check all other high band channels to see that they have not been seriously affected.
			201MC	199.25MC 203.75MC	11			
			195MC	193.25MC 197.75MC	10			
			189MC	187.25MC 191.75MC	9			
			183MC	181.25MC 185.75MC	8			
15.	"	"	85MC	83.25MC 87.75MC	6	"	*A29, A30, A31	Adjust coils whose "A" number is preceded by (*), for maximum amplitude of response curve. Adjust others for symmetrical response similar to Fig. 4. Some tuners may have fixed coils for channels 5 thru 2. In such cases, make compromise adjustments of A29, A30 and A31.
			79MC	77.25MC 81.75MC	5		*A32, A33, A34	
			69MC	67.25MC 71.75MC	4		*A35, A36, A37	
			63MC	61.25MC 65.75MC	3		*A38, A39, A40	
			57MC	55.25MC 59.75MC	2		*A41, A42, A43	

VHF RF AND MIXER ALIGNMENT FOR TUNER #54-95362-1

Connect bias as under "Video IF Alignment".
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Connect a 22Ω resistor across the antenna coils while adjusting A44 and A45.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
16.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	195MC	193.25MC 197.75MC	10	Vert. Amp. thru 10K to point (G). Low side to chassis.	A44, A45	Adjust A44 and A45 for maximum amplitude and symmetry with markers as shown in Fig. 4. Remove 22Ω resistor.
17.	"	"	213MC	211.25MC 215.75MC	13	"	A46	Adjust for maximum amplitude of response similar to Fig. 4. Adjust by expanding or compressing coil turns.
			207MC	205.25MC 209.75MC	12		A47	
			201MC	199.25MC 203.75MC	11		A48	
			195MC	193.25MC 197.75MC	10		A49	
			189MC	187.25MC 191.75MC	9		A50	
			185MC	181.25MC 185.75MC	8		A51	
			177MC	175.25MC 179.75MC	7		A52	
			85MC	83.25MC 87.75MC	6		A53	
			79MC	77.25MC 81.75MC	5		A54	
			69MC	67.25MC 71.75MC	4		A55	
			63MC	61.25MC 65.75MC	3		A56	
			57MC	55.25MC 59.75MC	2		A57	

UHF TUNER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

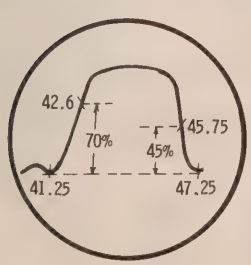


FIG. 1

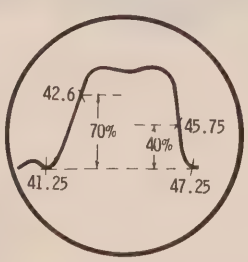


FIG. 2

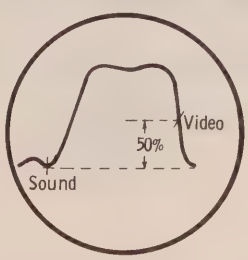


FIG. 3

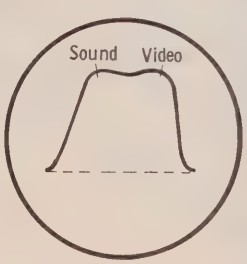
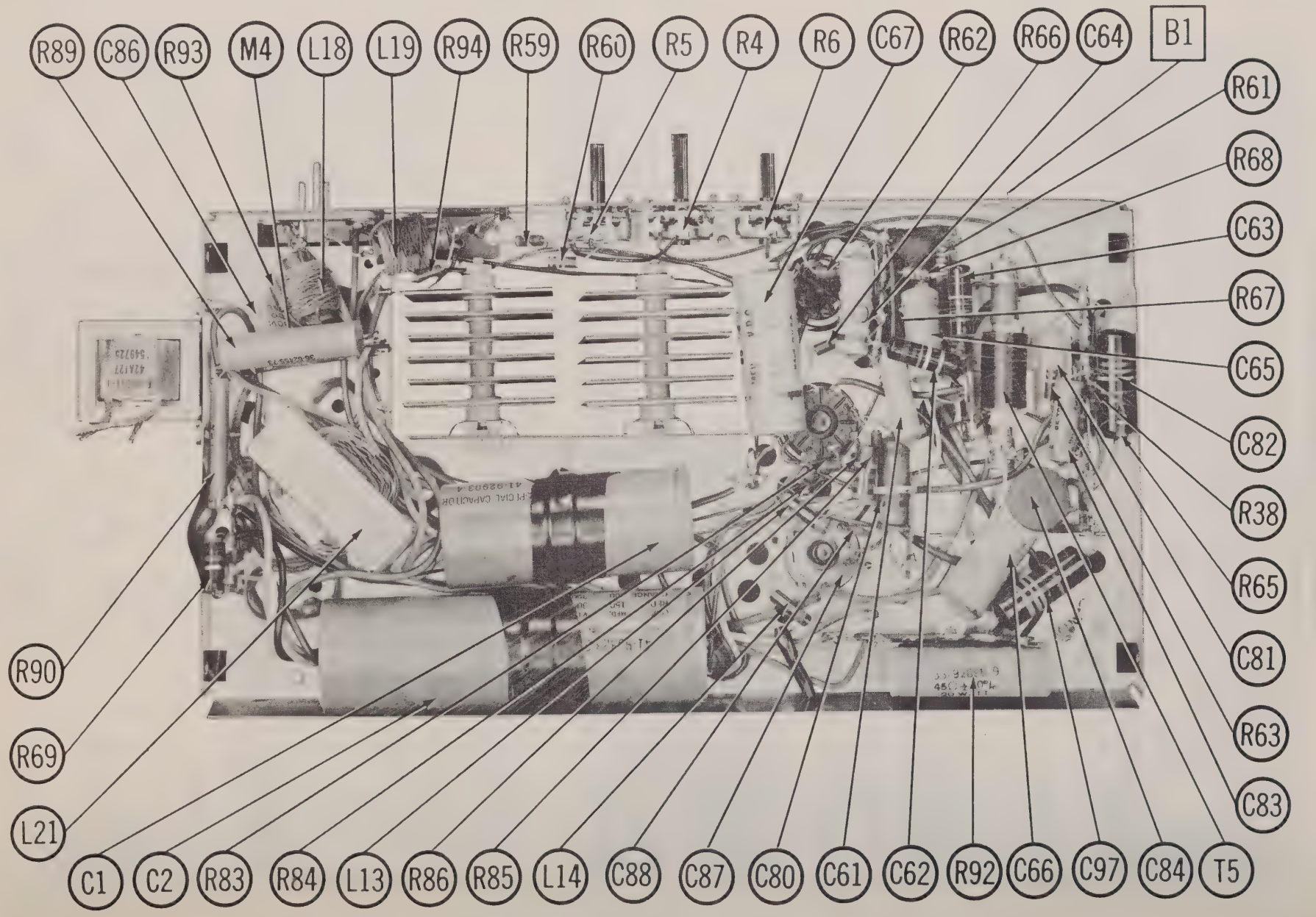
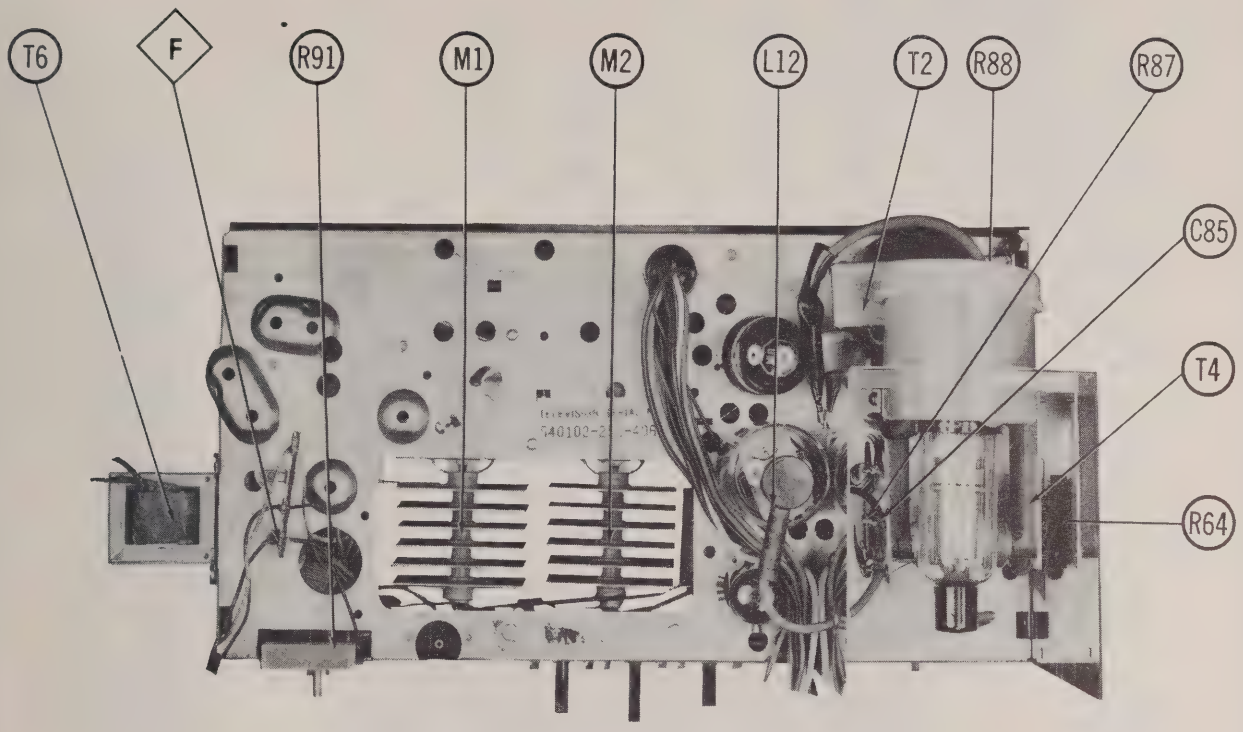


FIG. 4

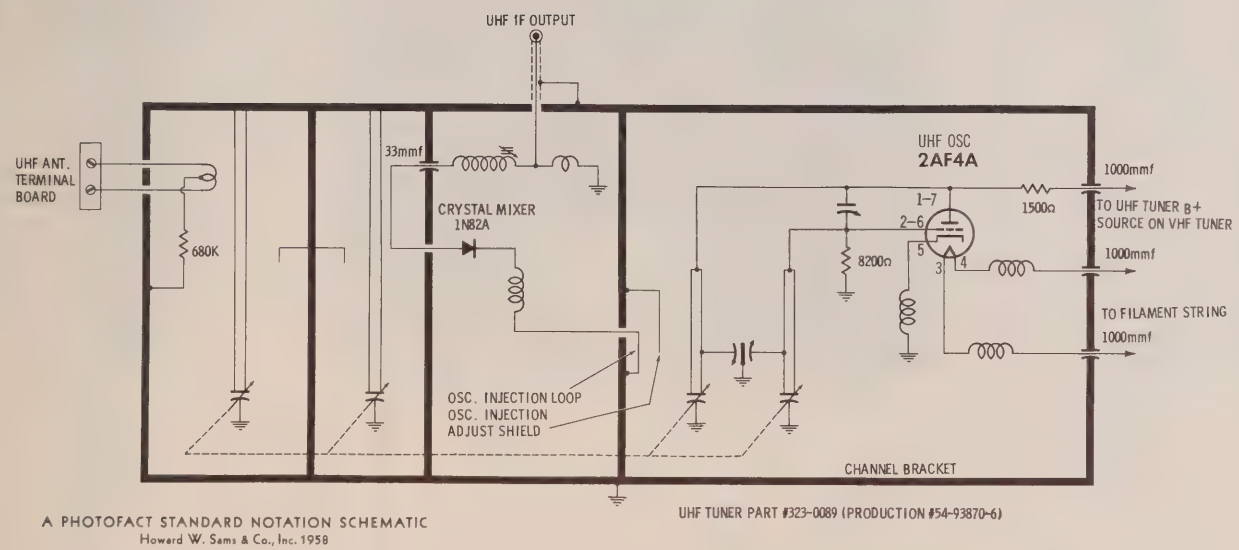


CHASSIS BOTTOM VIEW



CHASSIS TOP VIEW

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO



A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

UHF TUNER PART #323-0089 (PRODUCTION #54-93870-6)

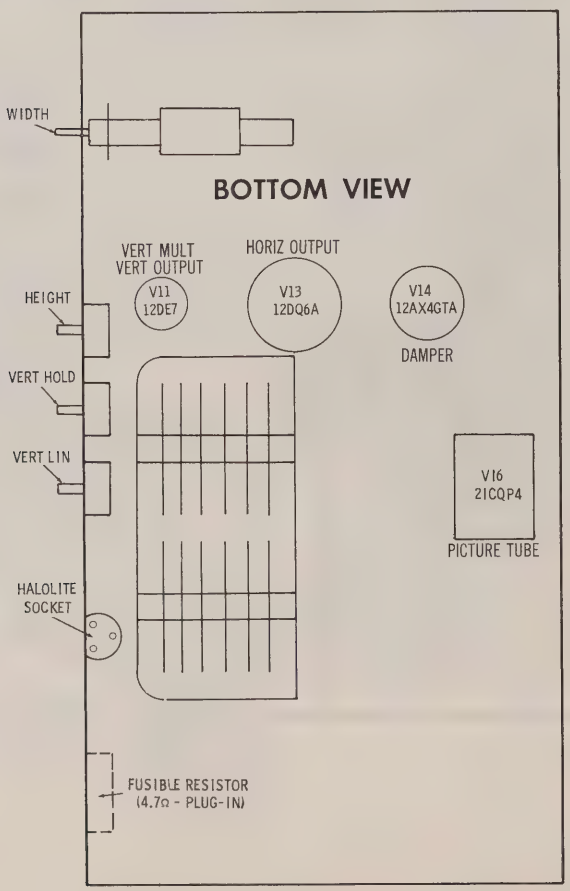
ALTERNATE TUNER SCHEMATIC

FOLDER 4

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	4BQ7	† 390Ω	370K	INF	12Ω	11Ω	INF	725K	0Ω	0Ω
V2	5U8	† 13K	165K	† 69K	12Ω	13Ω	† 2400Ω	0Ω	0Ω	10K
V3	3BZ6	330K	47Ω	11Ω	10Ω	† 1800Ω	† 1800Ω	0Ω		
V4	3BZ6	.1Ω	180Ω	10Ω	9Ω	† 1800Ω	† 1800Ω	0Ω		
V5	3BZ6	.1Ω	180Ω	9Ω	8Ω	† 2800Ω	† 2800Ω	0Ω		
V6	12BY7A	27Ω	3300Ω	0Ω	5Ω	5Ω	3.5Ω	† 6000Ω	† 1400Ω	0Ω
V7	5BR8	45K	200K	• 40K	3.5Ω	2.5Ω	† 15K	† 15K	150Ω	10K
V8	5T8	INF	27K	INF	1.5Ω	0Ω	650K	0Ω	10meg	† 470K
V9	5AQ5	470K	270Ω	2.5Ω	1.5Ω	† 970Ω	† 470Ω	470K		
V10	3CS6	† 1meg	0Ω	7Ω	6.5Ω	† 45K	† 11K	† 7.1meg		
V11	10DE7	† 240Ω	•1.5meg	1.5meg	15Ω	13Ω	• † 2.5meg	• 1.2meg	0Ω	150Ω
V12	6CG7	† 10K	2.8meg	1000Ω	7Ω	8Ω	† 47K	120K	1000Ω	0Ω
V13	12DQ6A	TP	20Ω	TP	† 8400Ω	1meg	TP	17.5Ω	0Ω	TOP CAP ‡15Ω
V14	12AX4GTA	NC	TP	¶	NC	† 50Ω	TP	17.5Ω	15Ω	
V15	1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP ‡252Ω
V16	21CQP4	NC	• 340K	6.5Ω	5Ω	47K	‡680K	‡680K		

¶ THIS READING CAN VARY GREATLY, (10K MINIMUM), DUE TO THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM 255V SOURCE.
‡ MEASURED FROM PIN 3 OF V14.
NC NO CONNECTION.
TP TIE POINT.



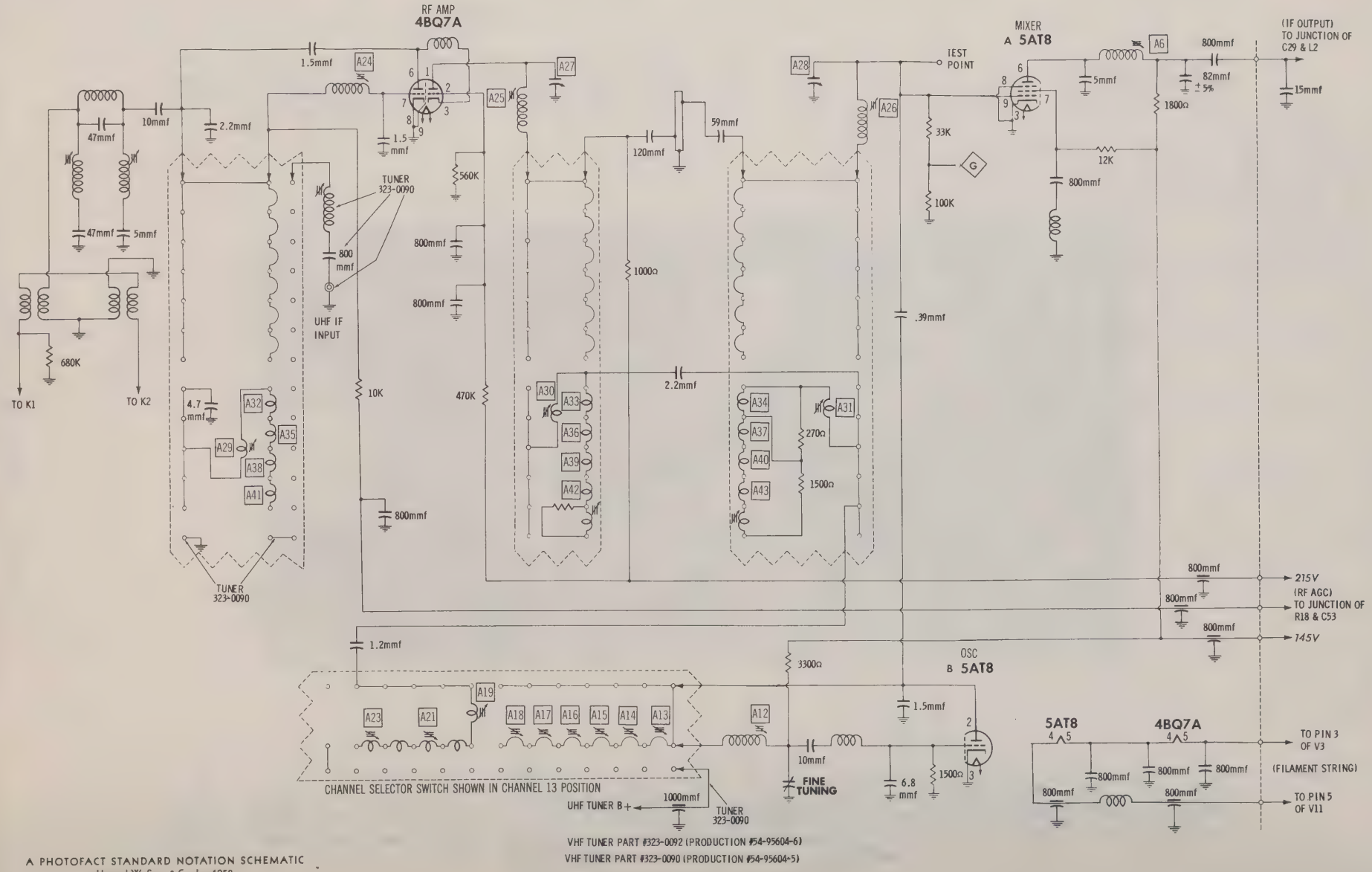
TUBE PLACEMENT CHART

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

INDUCTOR AND ALIGNMENT IDENTIFICATION

SYLVANIA MODELS 21C407, 408, 409, 512, 513 Series, 21P101 Series,
21T113, 114, 115, 213 Series (Ch. 1-539-1, -2, 1-540-1, -2, -3, -4)

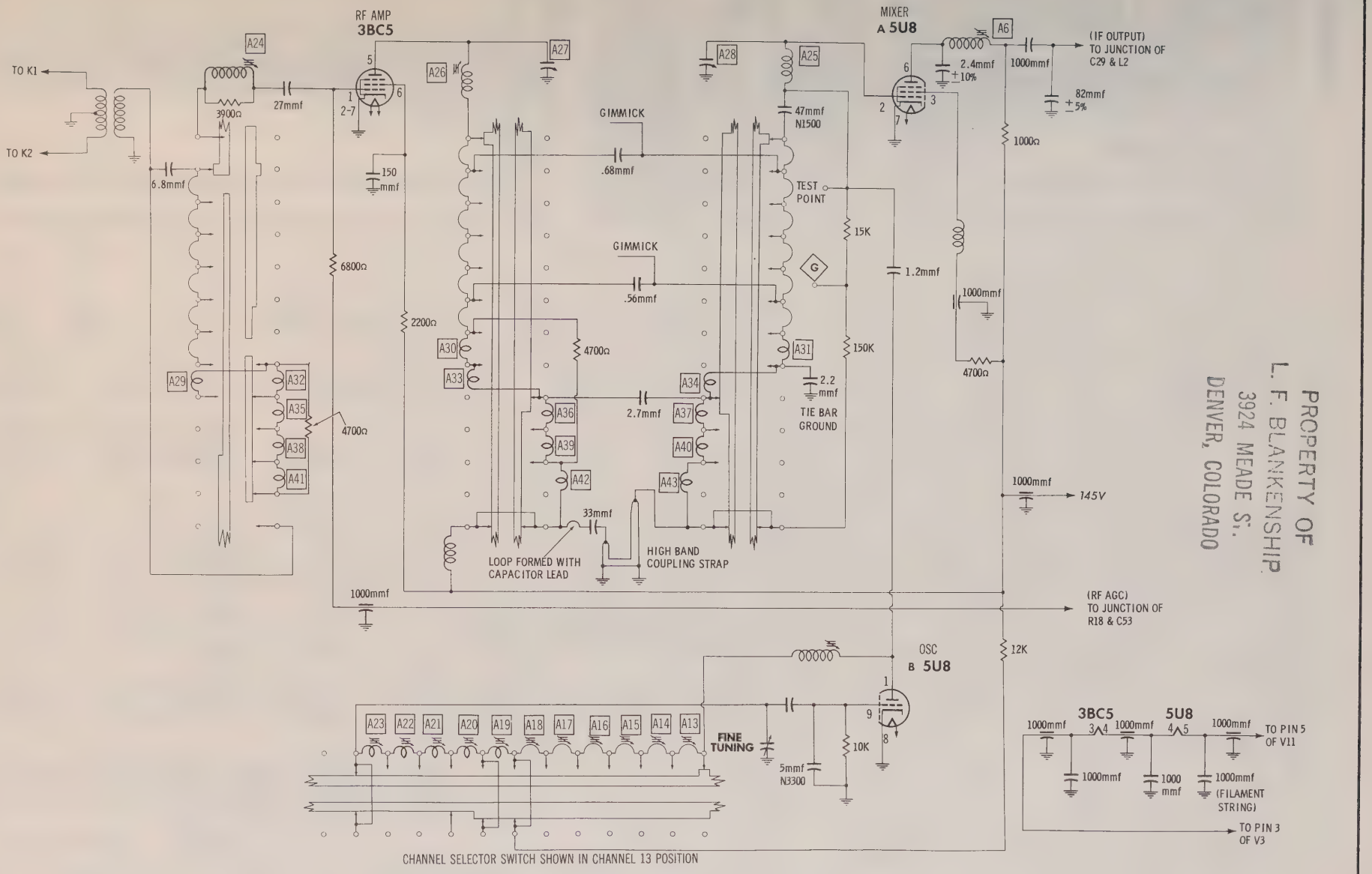
FOLDER 4



VHF TUNER PART #323-0092 (PRODUCTION #54-95604-6)
VHF TUNER PART #323-0090 (PRODUCTION #54-95604-5)

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

ALTERNATE TUNER SCHEMATIC



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3924 MEADE St.
DENVER, COLORADO

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Howard W. Sams & Co., Inc. 1958

VHF TUNER PART #323-0091 (PRODUCTION #54-94698-3)

ALTERNATE TUNER SCHEMATIC

SYLVANIA MODELS 21C407, 408, 409, 512, 513 Series, 21P101 Series, 21T113, 114, 115, 213 Series (Ch. 1-539-1, -2, 1-540-1, -2, -3, -4)

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	TYPE	NOTES
V1	R.F. Amplifier	6BQ7	6BS8*
V2	Mixer-Osc.	5U8	
V3	1st. Video-I.F. Amp	3BZ6	
V4	2nd Video-I.F. Amp	3BZ6	
V5	3rd Video-I.F. Amp	3BZ6	
V6	Video Output	12BY7A	
V7	Aud. Keying-Sound I.F. Amp	5BN8	
V8	Ratio Det.-A.F. Amp. - AGC Clamper	5T8	

ITEM No	USE	TYPE	NOTES
V9	Audio Output	3AQ5	
V10	Sync Sep.	3C86	
V11	Vert. Mult. - Vert. Output	10DE7	
V12	Horiz. Mult.	6CU7	
V13	Horiz. Output	12CG8A	
V14	Damper	12AX4GTA	
V15	HV Rectifier	1B3GT	

* Alternate

PICTURE TUBE

ITEM No	REPLACEMENT DATA			NOTES
	SYLVANIA PART No	GENERAL ELECTRIC PART No	SYLVANIA PART No	
V16	21CQP4		21CQP4 ①	① Silver screen "86"

ELECTROLYTIC CAPACITORS

ITEM No	RATING		REPLACEMENT DATA						
	CAP	VOLT	SYLVANIA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	150	300	1E-1025	PRI-100	XAG315	WD425	TD-300-150	S-100	TVA-1301
C2A	150	350	1E-4034	PR4-350		WQ402			R3543 *
B	100	300							R3539 *
C	20	300							
D	100	25							
C3A	40	300	1E-3029	AFHD-88-60		PFP238.4			
B	40	300							
C	25	25							
C4	2	50	1E-1041	PRS50V2	SSR3-50	TC302	TD-2-50	MT-0502	TVA-1301

* Non-catalog item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	SYLVANIA Part No.	AEROVOX Part No.	CENTRALAB Part No.	CORNELL-DUBILIER Part No.	ERIE Part No.	MALLORY Part No.	SPRAGUE Part No.	
C5	6.8			NPO-DI 6.8	TCZ-6R8				5TCCB-V68	NPO 5% ①
C6	35				TCN-35		TC-35		5TCU-Q35	N750 5%
C7	1000			EF-001	MFT-1000			503C-DI		
C8	3.3			NPO-DI 3.3	TCZ-3R3	C10Y33C	TCO-3.3	ZT-5533	5TCCB-V33	NPO
C9	3.3-3.0				53S-3		3JI5-D	CT565A		
C10	680				D6-6R	5R5T66	RD-680		MB-368	10%
C11	1.8			NPO-BI 1.8	TCZ-1R8		TCO-1.8			
C12	1.8			NPO-BI 1.8	TCZ-1.0		TCO-1.0		5TCCB-V15	
C13	1.8			NPO-BI 1.8	TCZ-1R5					
C14	47									N1500
C15	1000			EF-001	MFT-1000			503C-DI		
C16	35			N750-DI 35	TCN-35	C10Q35U	TC-35		5TCU-Q35	N750 ③
C17	3.3-3.0				53S-3		3JI5-D	CT565A		
C18	1000			EF-001	MFT-1000			503C-DI		
C19	1000			EF-001	MFT-1000			503C-DI		
C20	34				TCZ-34	5ZR5G34	TCO-34		5GA-T8	5%
C21	800			BPD-0008	DD-801	L10T8	RD-0008		5GA-T8	N2200 5%
C22	82									N330
C23	8									③
C24	1.8			NPO-BI 1.0	TCZ-1.0					
C25	10			N750-DI 10	TCN-10		TC-10		5TCCB-V1	N750 5% ①
C26	1000			EF-001	MFT-1000			503C-DI		
C27	1000			EF-001	MFT-1000			503C-DI		
C28	1000			EF-001	MFT-1000			503C-DI		
C29	8.2		1E-0022	NPO-BI 8.2		TCZ-8.2				NPO 5%
C30	21		1E-0021							NPO 5%
C31	1000		1E-1000D	BPD-001	DD-102	BYA5DI	RD-1000	DC521	5HK-DI	
C32	.22	100	1E-0018	P388N-23		CUB5E23		GEM-4023	5TM-P23	
C33	.15	200	1E2-0315	P388N-15		CUB5P15		GEM-3015	5TM-P15	10%
C34	470		1B6-0470		D6-471	5R5T47	RD-470		MB-347	10%
C35	47				TCZ-47	C10Q47C	TCO-47		5TCC-Q47	NPO 5%
C36	560		1B6-0560		D6-561	5R5T56	RD-560		MB-356	10%
C37	270		1B6-0270			5R5T27	RD-270		MB-327	5%
C38	800		1B6-0800			5R5T8			MB-38	10%
C39	1000		1E6-1000D	BPD-001	DD-102	BYA5DI	RD-1000	DC521	5HK-DI	
C40	1000		1E6-1000D	BPD-001	DD-102	BYA5DI	RD-1000	DC521	5HK-DI	
C41	1000		1E6-1000D	BPD-001	DD-102	BYA5DI	RD-1000	DC521	5HK-DI	
C42	4.7			NPO-DI 4.7	TCZ-4R7	C10Y47C	TCO-4.7		5TCCB-V47	NPO 10%
C43	10		1E6-0010	NPO-DI 10	TCZ-10	C10Q-10	ZT-541		5TCC-Q	NPO 10%
C44	10		1E6-0010	NPO-DI 10	TCZ-10	C10Q-C	TCO-10	ZT-541	5TCC-Q	NPO 10%
C45	.022	300	1E2-0022							10%
C46	150		1E6-0150P		D6-151	5ZR5T15	RD-150		MB-318	10%
C47	68		1E3-0068	1689-00068	D6-680	5ZR5G68	RD-68		MB-468	10%
C48	.22	600	1E3-04022	P468N-22		CUB4P22		GEM-4022	4TM-P22	
C49	.047	400	1E2-0447	P488N-47	DF-503	CUB4E47		GEM-4147	4TM-347	
C50	3300	1000	1E4-3300	HVD-15-3300	DG20-332	BYA10D32	HD15-3300	DC10322	5GA-D32	
C51	.47	100	1E2-0047	P388N-47		CUB2P47		GEM-3047	5TM-P47	
C52	1000		1E6-1000D	BPD-001	DD-102	BYA5DI	RD-1000	DC521	5HK-DI	
C53	.1	200	1E6-0068	P388N-1	DF-104	CUB4P1		GEM-401	4TM-P1	10%
C54	100		1E3-01	1689-0001	DD-101	32R5T1	RD-100	MCB325	MB-31	10%
C55	4700		1E6-4700D	BPD-0047	DD-472	BYA10D47	RD-4700	UC-5367	5HK-D47	
C56	4700		1E6-4700D	BPD-0047	DD-472	BYA10D47	RD-4700	UC-5367	5HK-D47	
C57	.01	600	1E0-06388					GEM-1611	5GA-T8	10% ③
C58	.047	400	1E2-0447	P388N-047	DF-503	CUB2547		GEM-4147	2TM-347	
C59	.1	400	1E2-0401	P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C60	.01	300	1E0-0611					GEM-1611		10%
C61	.022	400	1E0-06123							10%
C62	.001	600	1E0-0631							10%
C63	.0022	1000	1E0-0583							10%
C64	.047	400	1E2-0447	P488N-047	DF-503	CUB4547		GEM-4147	4TM-347	
C65	.1	400	1E2-0401	P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C66	.47	200	1E2-06047	P288N-47		CUB2P47		GEM-2047	2TM-P47	
C67	.33	600	1E0-06023	P688N-33		CUB6P33		GEM-6033	6TM-P33	③
C68	.01	600	1E0-0631	1468-0001	DD-101	32R5T1	RD-100	MCB325	MB-31	10%
C69	82		1E3-0083	1468-000082	DD-820	32R5T83	RD-83		MB-483	10%
C70	1000		1E6-1000			1R5D1	RD-1000	MCB255	MB-31	10%
C71	1000		1E6-1000			1R5D1	RD-1000	MCB255	MB-31	10%
C72	.0047	300	1E0-06347					GEM-16347		10%
C73	.047	400	1E2-0447	P288N-047	DF-503	CUB2547		GEM-4147	2TM-347	
C74	100		1E3-0101	1469-0001	DD-101	32R5T1	RD-100	MCB325	MB-31	10%

CAPACITORS (cont)

ITEM No	RATING		REPLACEMENT DATA							NOTES
	CAP	VOLT	SYLVANIA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C75	.0047	600		P688N-0047	D6-472	CUB6D47	GP-4700	GEM-6247	5TM-D47	
C76	330		1E3-0330	1469-00033	D6-331	5R5T33	ED-330		MB-333	10%
C77	680		1E3-068E	1464-00068		1R5T68	CY15C68J		MB-368	5%
C78	1000		1E6-1000			1R5D1	RD-1000	MCB255	MB-31	10%
C79	4700		1E6-4700D	BPD-0047	DD-473	BYA10D47	RD-4700	UC-5367	5HK-D47	
C80	.033	400		P488N-033	DF-303	CUB6S33		GEM-6133	6TM-S33	③
C81	.022	200	1E6-06122	P368N-033	DG30-223	CUB4E22	ED-03	GEM-6123	2TM-S22	10%
C82	.027	600	1E0-06127							10%
C83	.01	600	1E0-0611					GEM-1611		10%
C84	470	4000	1E4-0471	HVD-60-470	DD60-471	HVB50T47	HD6-470	DC50347	5GA-T8	
C85	82	3000	1E0-0681							10%
C86	5000	1400	1E9-0060	DAC-8	DD30-502	HVE16D5	HD15-4700	GEM-1625	MB-D6	
C87	1000		1E6-1000D	BPD-001	DD-102	BYA5DI	RD-1000	DC521	5HK-DI	
C88	1000		1E6-1000D	BPD-001	DD-102	BYA5DI	ED-1000	DC521	5HK-DI	
C89	1000		1E6-1000D	BPD-001	DD-102	BYA5DI	ED-1000	DC521	5HK-DI	
C90	1000		1E6-1000D	BPD-001	DD-102	BYA5DI	ED-1000	DC521	5HK-DI	
C91	1000		1E6-1000D	BPD-001	DD-102	BYA5DI	ED-1000	DC521	5HK-DI	
C92	1000		1E6-1000D	BPD-001	DD-102	BYA5DI	ED-1000	DC521	5HK-DI	
C93	1000		1E6-1000D	BPD-001	DD-102	BYA5DI	ED-1000	DC521	5HK-DI	
C94	4700		1E6-4700D	BPD-0047	DD-472	BYA10D47	ED-4700	UC-5367	5HK-D47	
C95	4700	1000	1E9-0057	HVD-15-4700	DD30-472	BYA10D47	HD15-4700	GEM-10247	5GA-D47	
C96	4700	1000	1E9-0057	HVD-15-4700	DD30-472	BYA10D47	HD15-4700	GEM-10247	5GA-D47	
C97	.033	600	1E0-06133	P688N-033	DF-303	CUB6S33		GEM-6133	6TM-S33	

1 Some versions may use 7.5mmf in this application.
2 Some versions may use 2.7mmf in this application
3 Some versions may use 47mmf, N1500 in this application.
4 Some versions may use 1.0mmf, in this application.
5 Some versions may use 12mmf, N750 in this application.
6 Some versions may use .0068mfd 10% 600V (Part #160-06268) in this application.
7 Some versions may use .33mfd 600V (Part #163-04033) in this application.
8 Some versions may use .047mfd 200V (Part #163-04147) in this application.

CONTROLS

ITEM No	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SYLVANIA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	250K	½	1S3-0139					Volume - Note 1
R2	15K	½	1S3-0131					Contrast - Tap ①-5000Ω-Note 2
R3	1meg	½	1S3-0134					Brightness - Note 3
R4A	1.5meg	½	1S3-0132	AB-742	A47-1.5meg -6	QII-158	PTA26L	Vert. Hold - Note 4
B	Shaft			AK-19	RN-3	TQ	Not Req.	
R5A	1meg	½	1S3-0134	AB-89	A47-1meg-6	QII-137	PTA25-4L	Vert. Lin. - Note 5
B	Shaft			AK-19	RN-3	TQ	Not Req.	
R6A	2.5meg	½	1S3-0125	AB-83	A47-2.5meg -6	QII-239	PTA26L	Height
B	Shaft			AK-19	RN-3	TQ	Not Req.	AGC - Note 6

Note 1. Part #153-0135 used in Ch. 53-1, -2.
Note 2. Part #153-0136 used in Ch. 53-1, -2.
Note 3. Used in Ch. 540-1, -2, Chassis 540-3, -4 use a 1meg control with on-off switch (part #153-0041).
Chassis 539-1, -3 use a 1meg control with on-off switch (part #153-0040).
Note 4. A 2meg control (part #153-0139) may be used in some versions.
Note 5. A 1meg with 300K stop (part #153-0137) may be used in some versions.
Note 6. Some versions of Chassis 540-1, -2 may use a 190K control (part #153-0138).

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		SYLVANIA PART No.	NOTES
	OHMS	WATT		
R8	10K		1BI-0104	
R9	820K		1BI-0273	
R10	680K		1BI-0473	
R11	5600Ω		1BI-0073	
R12	150K		1BI-06355	Note 2
R13	10K	1	1B2-0103	
R14	1000Ω		1BI-0646	Note 3
R15	68K		1BI-0374	Note 3
R16	10K		1BI-0833	
R17	12K		1BI-0125	
R18	47K		1BI-0234	
R19	6800Ω 5%		1BI-06823	
R20	220K		1BI-0224	
R21	470Ω		1BI-0471	
R22	47Ω		1BI-0470	
R23	8200Ω		1BI-0822	
R24	470Ω		1BI-0471	
R25	180Ω		1BI-0181	
R26	18K		1BI-0183	
R27	1000Ω		1BI-0102	
R28	470Ω		1BI-0471	
R29	180Ω		1BI-0181	
R30	100Ω		1BI-0101	
R31	33000Ω		1BI-0332	
R32	10K		1BI-0103	
R33	33000Ω	3	1B9-0079	
R34	27000Ω	4	1B9-0080	
R35	27Ω		1BI-0270	
R36	180K		1BI-0184	
R37	470K		1BI-0474	
R38	4.7meg		1BI-0475	
R39	150K		1BI-0154	
R40	47K		1BI-0473	Note 1
R41	470K 5%		1BI-06745	
R42	3.9meg 5%		1BI-03955	
R43	100K 5%		1BI-0104	
R44	100K 5%		1BI-0104	
R45	10K		1BI-0103	
R46	15K	1	1B2-0153	
R47	150Ω		1BI-0151	
R48	27K		1BI-0273	
R49	470Ω	2	1B3-0471	
R50	270Ω	1	1B2-0271	
R51	1meg 5%		1BI-03565	
R52	39K		1BI-0393	

ITEM No.	RATING		SYLVANIA PART No.	NOTES
	OHMS	WATT		
R53	100K		1BI-0104	
R54	27K		1BI-0273	
R55	47K		1BI-0473	
R56	10K		1BI-0103	
R57	6.8meg 5%		1BI-06855	Note 2
R58	10K	1	1B2-0103	
R59	5.6meg		1BI-0656	Note 3
R60	270K		1BI-0274	Note 3
R61	33K		1BI-0333	
R62	1.2meg		1BI-0125	
R63	220K		1BI-0224	
R64	1meg		1B9-0083	Note 4
R65	820K		1BI-0824	
R66	1meg		1BI-0105	
R67	500K		1B9-0081	Note 4
R68	18K		1BI-0183	
R69	150Ω	2	1B3-0151	
R70	2200Ω			
R71	2200Ω			
R72	2700Ω		1BI-0272	
R73	1meg		1BI-0105	
R74	820K		1BI-0824	
R75	1meg		1BI-0105	
R76	47K		1BI-0473	
R77	10K	1	1B2-0103	
R78	10000 5%		1BI-06325	
R79	120K 5%		1BI-0134	
R80	47K		1BI-0473	
R81	27000 5%		1BI-06735	
R82	2200Ω		1BI-0222	
R83	220Ω		1BI-0221	
R84	1meg		1BI-0105	
R85	220Ω		1BI-0221	
R86	82000Ω	2	1B3-0823	
R87	47000Ω		1BI-0472	
R88	47000Ω		1BI-0473	
R89	1000Ω	10	1B7-0026	
R90	390Ω	5	1B7-0018	
R91	4.7Ω		1B7-0053	Note 5
R92	45Ω	20	1B7-0052	
R93	1500Ω		1BI-0152	
R94	1500Ω		1BI-0152	
R95	47K	2	1B3-0473	
R96	47K	3	1B3-0473	
R97	470K		1BI-0474	

Note 1. Some versions of Chassis 540-1, -2 may use a 56K (Part #1BI-0563) in this application.
Note 2. Some versions of Chassis 540-1, -2 may use a 6.2meg 5% (Part #1BI-06255) in this application.
Note 3. Not used in some versions of Chassis 540-1, -2.
Note 4. Temperature compensating resistor.
Note 5. Some versions may use a 4.7 15W (Part #1B7-0034) in this application.

TRANSFORMER (HALOLIGHT)

ITEM No.	RATING			REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	SYLVANIA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T3	117V	860V			1A1-0083 ①					
	1A				1A1-0071 ②					

① Used in Models 21C407, 21T14.
② Used in Models 21C512, 513, 21T313.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No	USE	REPLACEMENT DATA							NOTES
		SYLVANIA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	Vert. Output	2A1-0045	21900①			A-8148 ②	26875 ①	U18X	
T3	Yoke-Horiz. (50.8mH) (90°)-Vert(22.5mH)	1A0-0032 ①		MDF-110					
MD0	Rear Cover & Centering Device	400-0034							
T4	Horiz. Output	2A1-0045		HVO-128 *					
T5	Width Coil (50-47mH)	1J2-0018							

① Use 8 to 1 turns ratio. Connect as autoformer
② Drill new mounting hole(s)
③ Includes resistors (R70, R71).

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	Ram Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
5		5				
6		6				
2		2				
1		1				
D		D				
C		C				

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	SYLVANIA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T6	5600Ω	3-4Ω	1A3-0081	21901①	A-3880 ②	A-3877 ③	34851 ①	S-81X ①	① Use orig. channel mounting frame.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	SYLVANIA PART No.	QUAM PART No.	
SP1	9"	PM	3-4Ω	53S-0806 ①	8A21	① Used in Models 21C407, 408, 512, 513
	8 1/2"	PM	3-4Ω	53S-0578 ②	8A1	② Used in Models 21T14, 21T313
	4"	PM		53S-0434 ③		③ Used in Models 21T13, 15, 21P101, 21C513
	8"	PM		53S-0505 ④		④ Used in Model 21C409

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		SYLVANIA PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	47.25MC Trap	1L8-0033					
L2	1st. Video IF	1L9-0022					
L3	2nd. Video IF	1L9-0023					Includes 41.25MC Trap
L4	3rd. Video IF	1L9-0021					
L5	4th. Video IF	1L9-0020					
L6	RF Choke	1L8-0020	19-1005	BC-566	4612		13 Microhenries
L7	RF Choke	1L8-0020	19-1005	BC-566	4612		13 Microhenries
L8	Shunt Peaking Coil	1L1-3033	19-3300	TV-180	6133	VP-7	330 Microhenries
L9	Series Peaking Coil	1L1-3084	19-3180	TV-184	6130		180 Microhenries
L10A	4.5MC Trap	1L8-0032					
B	Sound IF						
L11	Ratio Det.	1L8-0015					Includes resistors & cap.
L13	RF Choke	1L6-0059					11 Microhenries. Includes tube clip and lead assy. for V13
L13	RF Choke	1L8-0010	19-1005	BC-566	4612		13 Microhenries
L14	RF Choke	1L8-0010	19-1005	BC-566	4612		13 Microhenries
L15	Fil. Choke	1L8-0032	19-1000	BC-561	4603		1.2 Microhenries
L16	Fil. Choke	1L8-0032	19-1000	BC-561	4603		1.2 Microhenries
L17	Fil. Choke	1L8-0032	19-1000	BC-561	4603		1.2 Microhenries
L18	Line Choke	1L6-0027					119 Microhenries
L19	Line Choke	1L6-0027					119 Microhenries

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.		REPLACEMENT DATA					NOTES
	PRI.	SEC.	SYLVANIA PART No.	Meisner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordarson PART No.	
L20	35Ω		1S3-0019						

FILTER CHOKE

ITEM No.	RATINGS		REPLACEMENT DATA						
	TOTAL DIRECT CURRENT	D.C. RESISTANCE	INDUCTANCE IO CURRENT 1000 ^V/s	SYLVANIA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L21	.320A	33Ω	1 1 Hy.	145-0020	C-5037 ①	C-2998 ①	C-2238 ①	26C44 ①	C-4TX ①

① Drill new mounting hole.

PARTS LIST AND DESCRIPTIONS (Continued)

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	SYLVANIA PART No.	REPLACEMENT DATA	
K1	Antenna Isolation	470mmf, .3-1meg	190-0035	Centralab Sprague	RC-471 R-9177
K2	Antenna Isolation	470mmf, .3-1meg	190-0035	Centralab Sprague	RC-471 R-9177
K3	Audio Coupling	5000mmf, 250mmf, 5000mmf, 250mmf, 10meg, 470K, 470K	190-0033 ①	Sprague	R-9183
K4	De-Emphasis	1000mmf, 4000mmf, 10000mmf, 22K	190-0034	Centralab Sprague	PC-334 PB-3
K5	Sync Coupling	10000mmf, 270mmf, 330K	190-0032 ②	Sprague	R-9184
K6	Vert. Blanking	10000mmf, 3300mmf, 22K, 15K, 22K, 47K	190-0031 ③	Sprague	R-9185

① Some versions may use part #190-0039 in this application.
② Some versions of Chassis 540-1, -2 may use part #190-0036 in this application.
③ Some versions may use part #190-0037 in this application.

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	SYLVANIA PART No.	FEDERAL PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1	.320A	517-0010 ①	1179A ①	1N1008 ②	RS450SL ①	500 ① M500 ③	① Selenium type. ② Germanium type.
M2	.320A	517-0010 ①	1179A ①	1N1008 ②	RS450SL ①	500 ① M500 ③	③ Silicon type. ④ 2 Required.
M3		624-0006 ①	1215 ①④		1T1 ①④		

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			SYLVANIA PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M4	4" length of #24 wire		①					

① Not used in some versions.

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		SYLVANIA PART No.	CBS PART No.	SYLVANIA PART No.	
M5	1N295	1N295	1N60	1N34A	Video Det. (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	SYLVANIA PART No.	NOTES
M6	Lamp	611-2106	HaloLight - Models 21C407, 512, 513, 21T114, 213
M7	Tuner	323-0092	VHF (54-95359-5 or 54-95604-6) Ch. 540-1
	Tuner	323-0093	VHF (54-95362-1) Ch. 540-3
	Tuner	323-0091	VHF (54-95803-2 or 54-94698-3) Ch. 539-1
	Tuner	323-0090	VHF (54-95604-5) Ch. 539-2, 540-2, -4
	Tuner	323-0089	UHF (54-93870-6) Ch. 539-2, 540-2, -4
M8	Switch	571-0021	On-off (Rotary) Models 21C407, 21T114
	Switch	571-0018	On-off (SPST Slide Type) Models 21C512, 513, 21T213
M9	Switch	571-0018	HaloLight (SPST Slide Type) Models 21C407, 21C513, 21T114, 21T213
	Switch	571-0022	HaloLight (Rotary wafer) Model 21C512
M10	Centering Device	400-0034	Includes yoke cover

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Glass	710-0035	Filter - Models 21C407, 21T114
Safety Glass	710-0034	Clear - Models 21T213, 21C513, 21C512
Filter	715-0021	Models 21T213, 21C513, 21C512
Filter	715-0024	Models 21T113, 21C409
Filter	715-0025	Models 21P101, 21T115, 21C408
Mask	716-0034	Models 21C407, 21T114, 21T213, 21C513, 21C512
Mask	716-0035	Model 21T113
Mask	716-0036	Model 21C409
Mask	716-0041	Model 21P101
Mask	716-0037	Model 21T115
Mask	716-0039	Model 21C408
Mask	716-0038	UHF - Model 21T115
Mask	716-0040	UHF - Model 21C408
Escutcheon	715-0023	Models 21C407, 21T114
Escutcheon	714-0104	Models 21T213, 21C513, 21C512

WIRING DATA

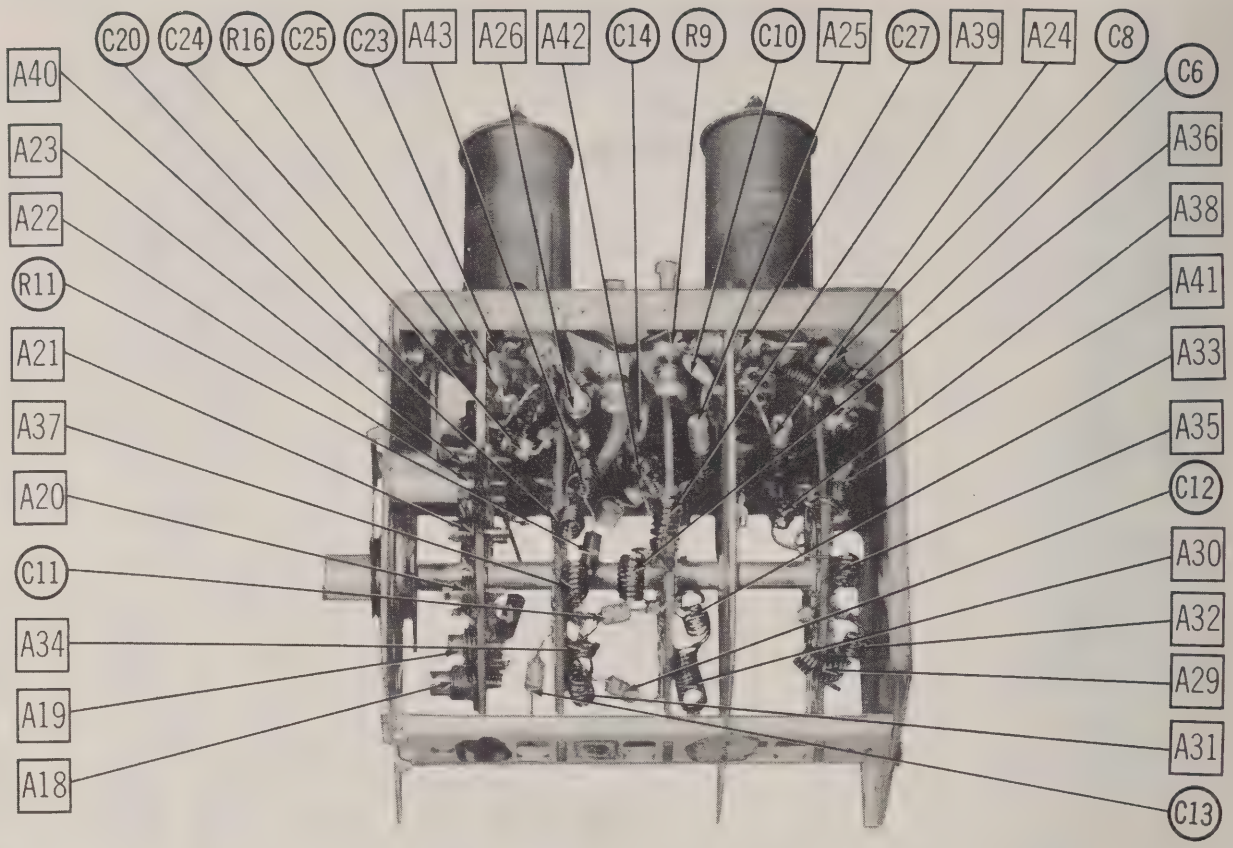
High Voltage Lead	Use BELDEN No.	8869
Shielded Hook-up Wire	Use BELDEN No.	8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No.	8874
300Ω Tuner Input Lead	Use BELDEN No.	8225
300Ω Antenna Lead-in	Use BELDEN No.	8230 or 8275
Antenna Rotor Cable	Use BELDEN No.	8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor

ALTERNATE TUNER SCHEMATIC

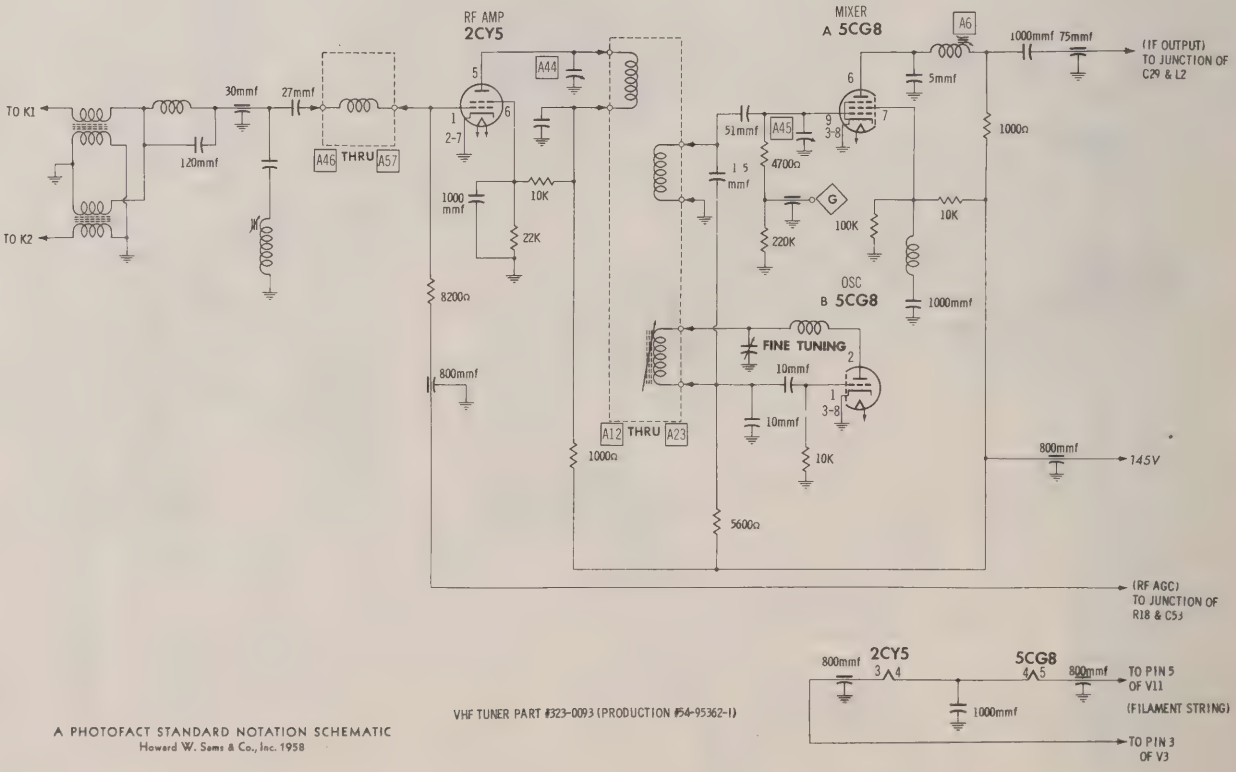
PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

FOLDER 4



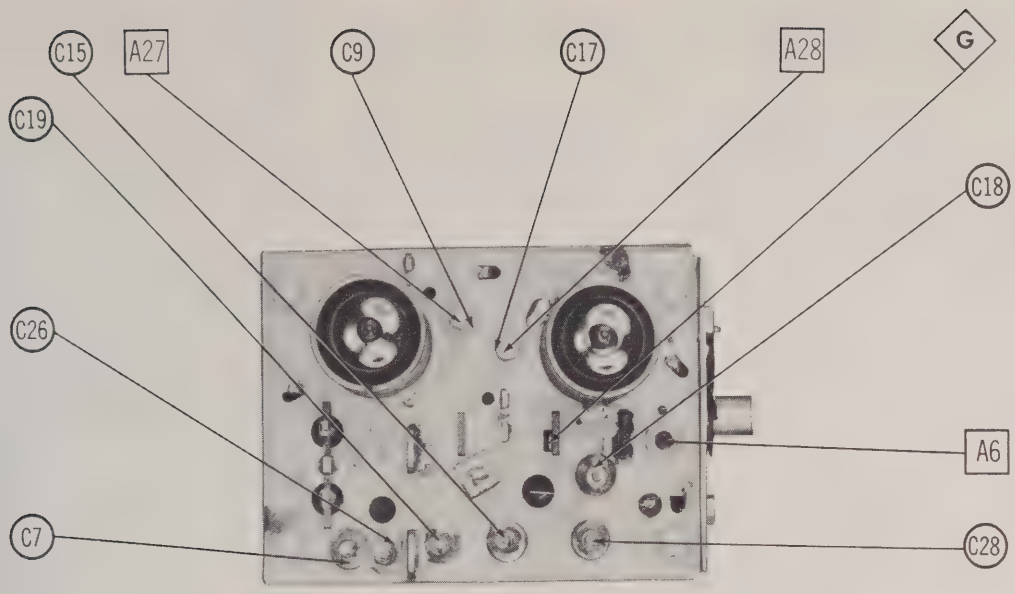
RF TUNER-RIGHT SIDE



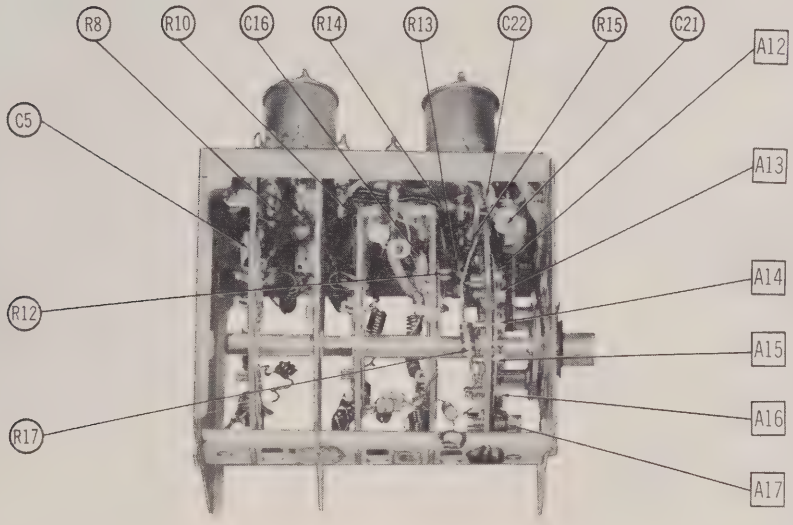
A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

VHF TUNER PART #323-0093 (PRODUCTION #54-95362-1)

ALTERNATE TUNER SCHEMATIC

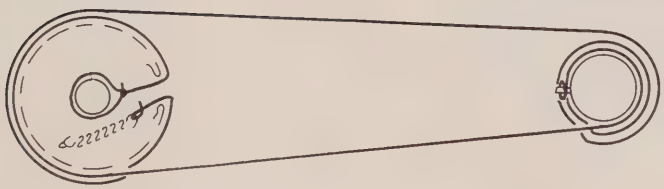


RF TUNER—TOP VIEW

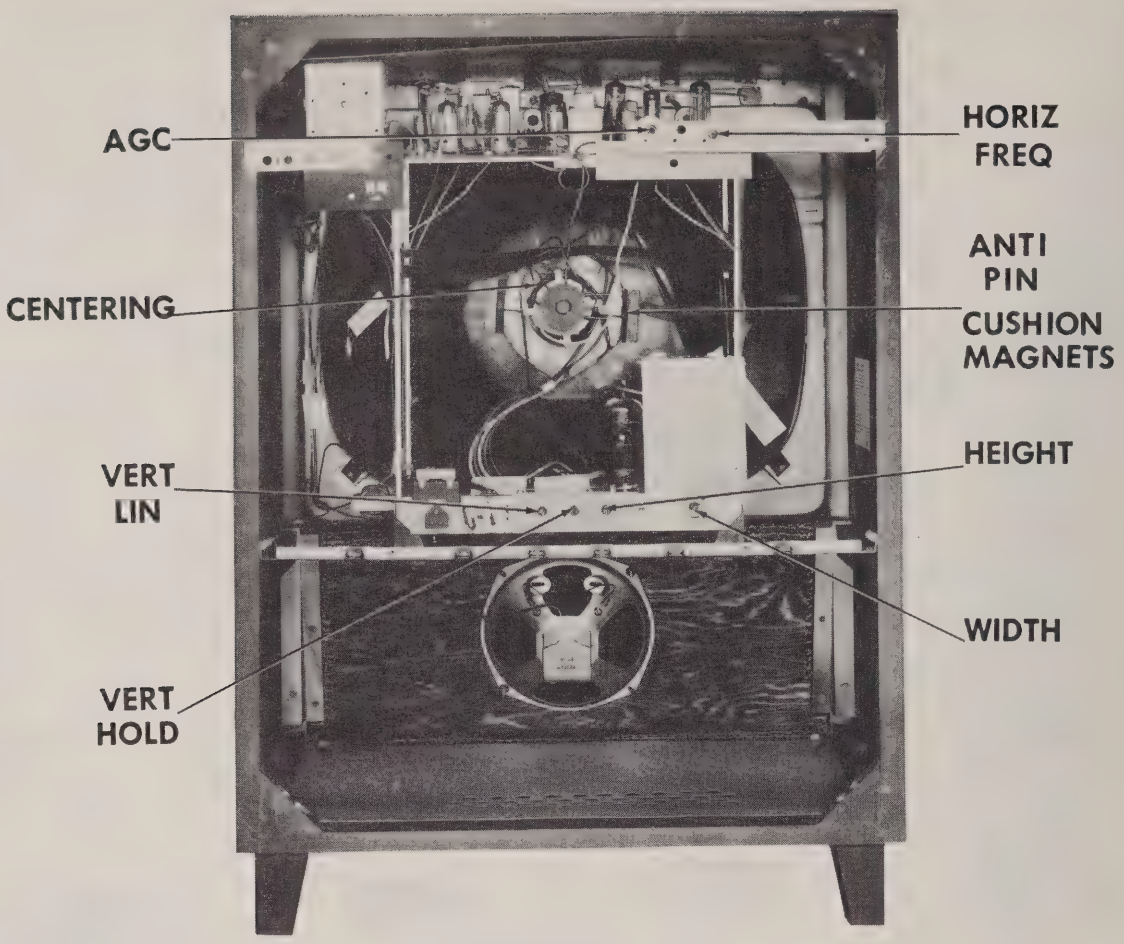


RF TUNER—LEFT SIDE

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO



UHF DRIVE CORD STRINGING



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern.

Set the brightness and contrast controls for a normal picture.

Turn the horizontal hold control clockwise until the picture loses sync. It may be necessary to switch off channel and back again for picture to lose sync.

Turn the horizontal hold control slowly counter clockwise until the picture just falls into sync.

Adjust width slug (B1) for picture SLIGHTLY wider than necessary to fill picture mask.

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove the screws holding the rear cover. Remove the rear cover.

2. Remove the channel selector and fine tuning knobs. On Models 21T114, 115, 21C407, 408 are push-on type knobs; on Models 21T114, 21C407 compress the sides of the fine tuning coupling to remove from the tuner; on Models 21P101, 21T113, 21C409 set the channel selector to channel 7, and rotate the fine tuning knob so that the slot is accessible from the rear of the cabinet. Depress a spring slip by inserting a screwdriver into the slot and remove the knobs by pulling up. NOTE: All UHF knobs and shafts are the push-on type.

3. Remove the on-off knob. On Models 21T114, 115, 21C407, 408 is a push-on type knob; on Models 21T115, 21C408 remove hex nut holding the control to cabinet; on Models 21T213, 21C512,513 a set screw must be removed and on Models 21P101, 21T113, 21C409 remove the push-on type inner knob, the limit stop washer in the outer knob and the push-on type outer knob and shaft.

4. On Models 21P101, 21T113, 21C409 disengage remaining knobs by pulling from shaft. NOTE: These knobs are secured to the cabinet and DO NOT remove completely. On other models the knob coupling will pull off the controls as the chassis is removed.

5. Remove the speaker leads, picture tube socket, yoke clamp and HV lead.

6. On Models 21T114, 21C407 remove the "HaloLight" plug from the chassis and jumper terminals to operate chassis out of the cabinet.

7. Remove 2 bolts from the bottom holding the chassis feet. Slide chassis back and lift up to disengage feet.

8. Remove chassis and yoke.

SAFETY GLASS CLEANING

Models 21P101, 21T113, 115, 21C408, 409.
Remove the name plate at the bottom of the mask. Remove 2 metal screws holding the safety glass clamp. Pull the safety glass out at the bottom and down to remove. NOTE: Use only soft cloth and water or mild detergent for cleaning.

Models 21T114, 21C407.
Remove escutcheon as outlined under "Chassis Removal". Remove 2 metal screws holding safety glass clamp. Tilt glass out at the top and lift up to remove.

Models 21T213, 21C512, 513 .
Remove escutcheon as outlined under "Chassis Removal". On Model 21C512 remove 8 screws holding the lower "HaloLight" panel. Remove 4 screws from the innermost row holding the lower trim assembly while supporting the safety glass. Tilt glass out at the bottom and slide down to remove.

PHOTOFACT* Folder
*TRADE MARK

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 7 IN SET 371

RCA MODELS 9BT9E, H, J (Ch. RC-1164B)

RCA Victor Models 9BT9E, H, J (Ch. RC-1164A) were covered in Folder 7 — Set 371.

Models 9BT9E, H, J (Ch. RC-1164B) are electrically identical to the models covered except for the following changes.

COMPONENT CHANGES

R6 is increased from 1000Ω to 1200Ω.

R22 is increased from 100Ω to 1000Ω.

C12 is increased from 30000mmf to 50000mmf.

C14 is omitted.

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

ALTERNATE TRANSISTORS

X1 (Converter) may be a 2N411.

X2 (1st. IF Amp.) may be a 2N409.

X3 (2nd. IF Amp.) may be a 2N409.

X4 (Driver) may be a 2N407.

X5 and X6 (Output) may be 2N407.

PRODUCTION CHANGES
BULLETIN 202

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 15 IN SET 225

SILVERTONE MODELS 5052, 5053 (Ch. 132.053-2)
6052, 6053 (Ch. 132.053-3)

Silvertone Models 3052 and 3053 (Ch. 132.053) were covered in Photofact Folder 15 — Set 225.

Models 5052, 5053 (Ch. 132.053-2), 6052, 6053 (Ch. 132.053-3) are electrically identical to the models covered, except for the following changes.

SPEAKER ADDED

The added models use 2 speakers, a 5" x 7" PM speaker (Part #N42986) and a 5" PM speaker (Part #N42987).

TONE SWITCH ADDED

A tone switch has been added and is a part of the radio-phono switch. The part number for models 5052 and 5053 is N42955. The part number for models 6052 and 6053 is N43499. A partial schematic showing the new tone-radio-phono switch is given on the reverse side.

(Continued on Reverse Side)

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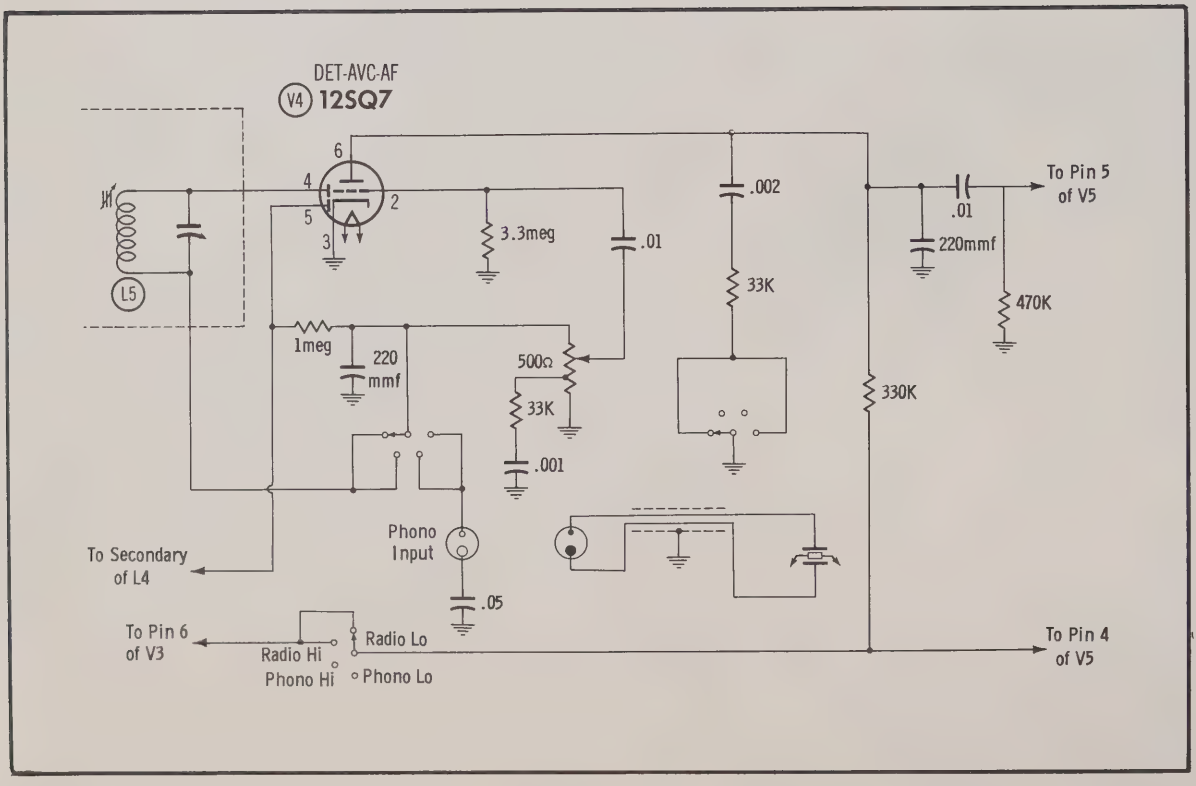
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1958 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America

FOLDER 5


DET-AVC-AF
V4 12SQ7
6
4
5
2
3
L5
3.3meg
.01
.002
33K
To Pin 5
of V5
.01
220mmf
470K
1meg
220
mmf
500Ω
33K
.001
330K
Phono
Input
To Secondary
of L4
.05
To Pin 6
of V3
Radio Hi
Phono Hi
Radio Lo
Phono Lo
To Pin 4
of V5

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 16 IN SET 364

TRUETONE MODELS 2D3817A, 2D3818A

Truetone Model 2D2720D was covered in Photofact Folder 16 — Set 364.

Models 2D3817A and 2D3818A are electrically identical to the model covered, except for the following changes.

COMPONENT CHANGES

A 100mmf ⓐ 500V ceramic disc capacitor is added from the junction of C46 and R1B to ground.

C70 is .047mfd in Models 2D3817A and 2D3818A.

A .22mfd ⓐ 200V capacitor is added from the junction of C72 and switch on volume control to ground.

A .22mfd ⓐ 200V capacitor is added from the junction of C1A and L13 to ground.

NEW VHF TUNER

VHF tuner #201A057 is used in Models 2D3817A and 2D3818A. A schematic showing the new tuner is given on the reverse side.

(Continued on Reverse Side)

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 10 IN SET 364

RCA VICTOR MODELS 8BT7J, LE, 8BT8FE, JE (Ch. RC-1169B, C)

RCA Victor Models 8BT7J, LE, 8BT8FE, JE (Ch. RC-1169, A) were covered in Photofact Folder 10 — Set 364.

Models 8BT7J, LE, 8BT8FE, JE (Ch. RC-1169B, C) are electrically identical to the models covered, except for the following changes.

COMPONENT CHANGES

A 680K $\frac{1}{2}$ watt resistor is added in parallel with the oscillator section of M4 (Tuning gang).

L2 (oscillator coil) is changed to part #105790.

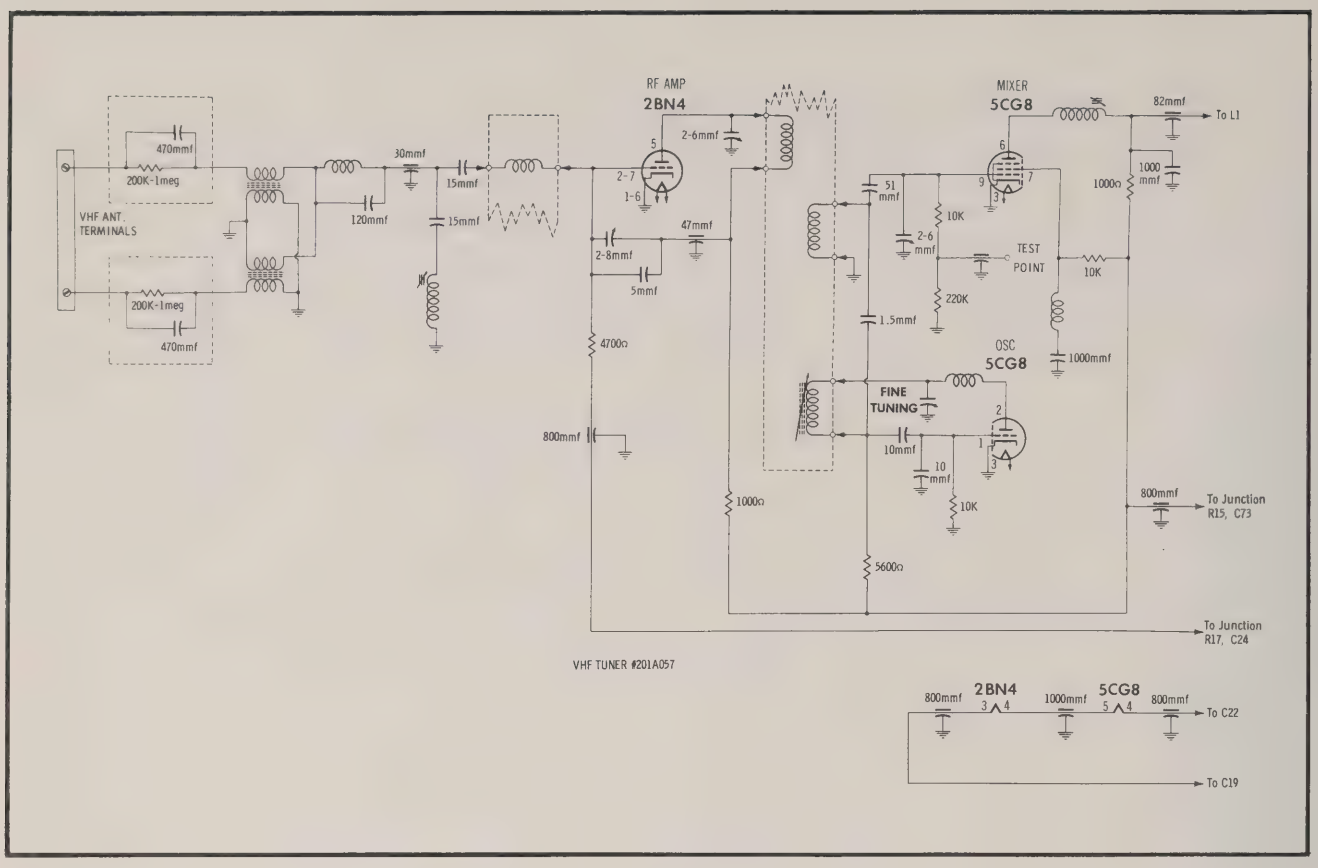
TRANSISTORS CHANGED

X1 (Converter) is changed from 2N140 to 2N411.

X2 (IF Amp.) is changed from 2N139 to 2N409.

X3 (AF Amp.) is changed from 2N109 to 2N407.

X4 (Output) is changed from 2N109 to 2N407.


RF AMP
2BN4
MIXER
5CG8
OSC
5CG8
VHF ANT. TERMINALS
470mmf
200K-1meg
200K-1meg
470mmf
30mmf
120mmf
15mmf
15mmf
2-6mmf
2-7
1-6
47mmf
2-8mmf
5mmf
4700Ω
800mmf
1000Ω
51 mmf
10K
2-6 mmf
TEST POINT
10K
220K
1.5mmf
1000mmf
FINE TUNING
10mmf
10 mmf
10K
5600Ω
82mmf
To L1
1000Ω
1000 mmf
800mmf
To Junction R15, C73
To Junction R17, C24
VHF TUNER #201A057
800mmf
2BN4
1000mmf
5CG8
800mmf
To C22
To C19

PHOTOFACT* Folder

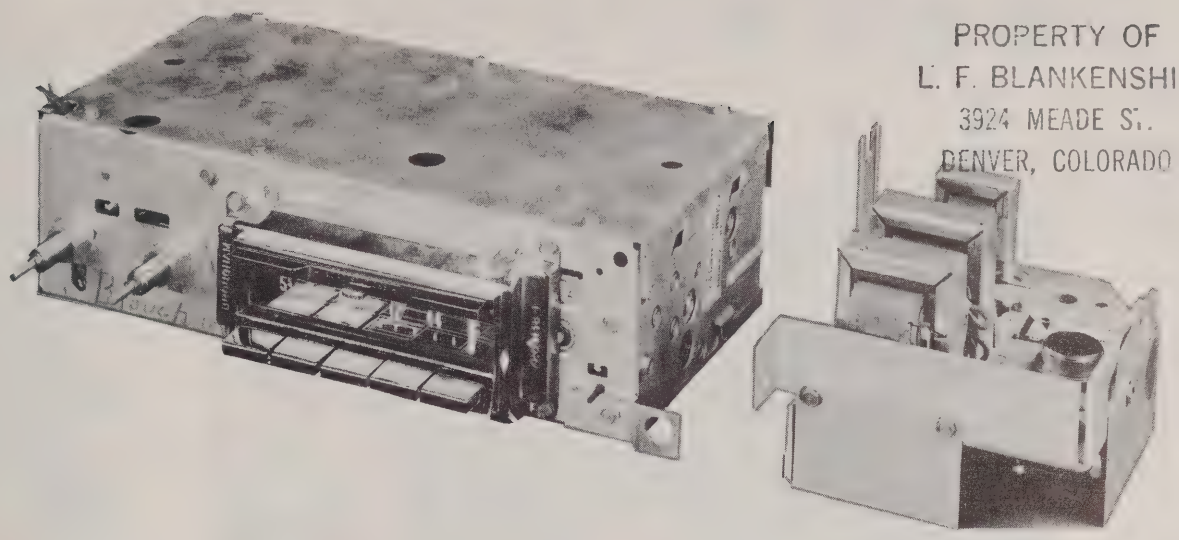
*TRADE MARK

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

CADILLAC MODEL 7268085

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

CADILLAC MODEL 7268085



TRADE NAME	Cadillac Brougham Model 7268085 (For 1957 Cadillac Brougham Automobiles)
MANUFACTURER	Delco Radio Div., G. M. Corp., Kokomo, Indiana
TYPE SET	Battery Operated Custom Built Transistorized AM Automobile Receiver
POWER SUPPLY	12 Volts DC
RATING	350MA @ 12.6 Volts DC (Before Serial #HD80) 2000MA @ 12.6 Volts DC (After Serial #HD80)
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Set sensitivity and volume controls to maximum, tone control to treble. Attenuate signal generator so that VTVM readings do not exceed 3 Volts. Use an insulated alignment screwdriver for adjusting. Signal generator return lead should be very short.

To set receiver to high frequency end, put a .018" feeler gauge (or bare #25 wire) in slot against high frequency stop. Press station bar and allow planetary arm to run against feeler gauge. Turn off receiver, then on.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.		High side to point (B) Low side to chassis.	262KC	High freq. end. (See alignment instructions)	DC probe to point (A). Common to chassis.	A1	Adjust for maximum deflection.
2.		"	"	"	"	A2	Adjust for MINIMUM deflection.
3.		High side to point (C) Low side to chassis.	"	"	"	A3, A4 A5, A6	Adjust for maximum deflection.
	Check setting of oscillator coil core (A10). Rear of core should be 1 5/8" from mounting end of coil form. Antenna and RF coil cores (A11 & A12) should be as far from the mounting end of their coils as the oscillator coil core.						
4.	82mmf	High side to antenna terminal. Low side to chassis.	1615KC	High freq. end. (See alignment instructions)	DC probe to point (A). Common to chassis.	A7, A8 A9	Adjust for maximum deflection.
5.	82mmf	"	600KC	Tune to 600KC signal	"	A10, A11 A12	"
6.	82mmf	"	1615KC	Tune to 1615KC signal	"	A8, A9	"

With radio installed in car and antenna fully extended, tune in a weak station between 600KC and 1000KC and adjust A9 for maximum output.

POINTER ADJUSTMENT

If necessary, turn pointer adjustment so that pointer coincides with 900KC on the dial when receiving a 900KC signal.

PUSHBUTTON ADJUSTMENT

1. Turn on receiver and allow a 10 minute warm-up period.
2. Extend antenna fully.
3. Pull pushbutton to the left and out.
4. Tune manually to desired station. Press pushbutton in firmly.
5. Repeat for remaining pushbuttons.

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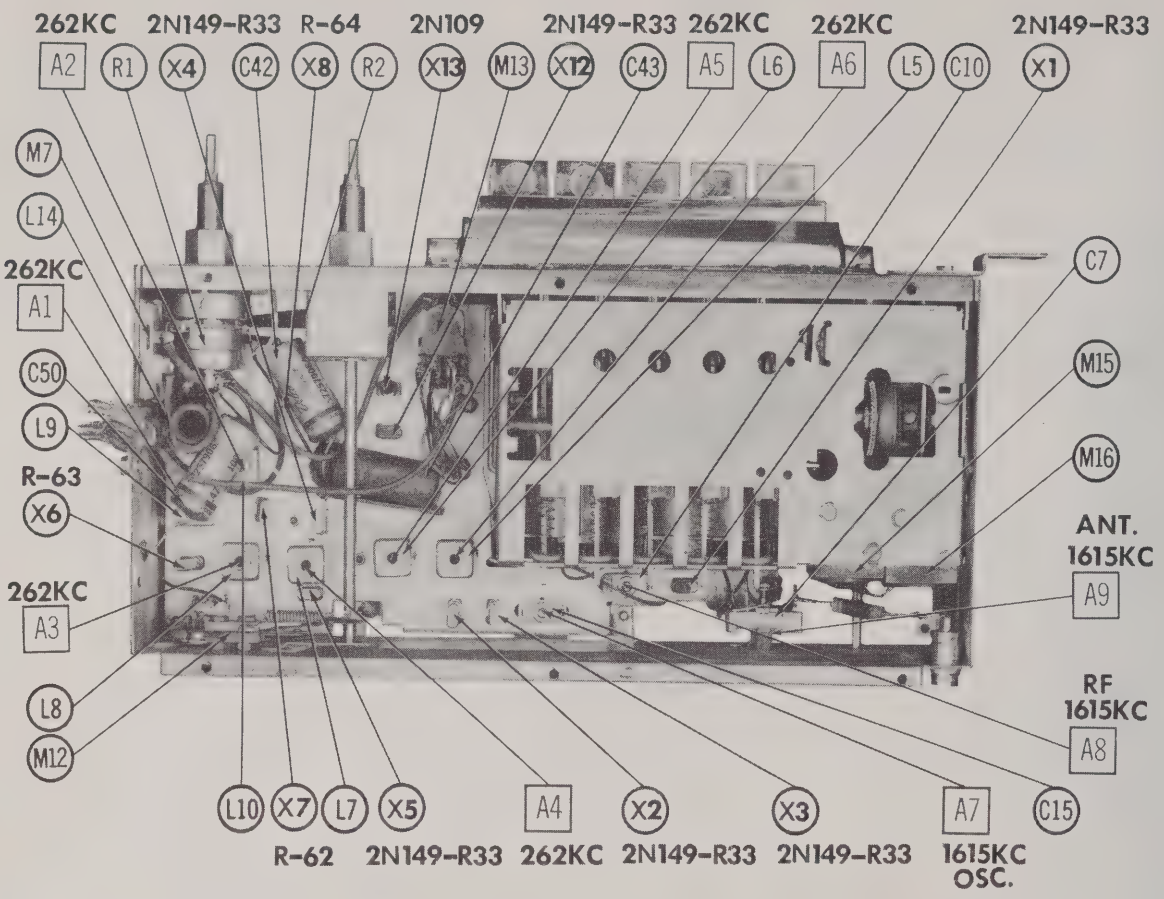
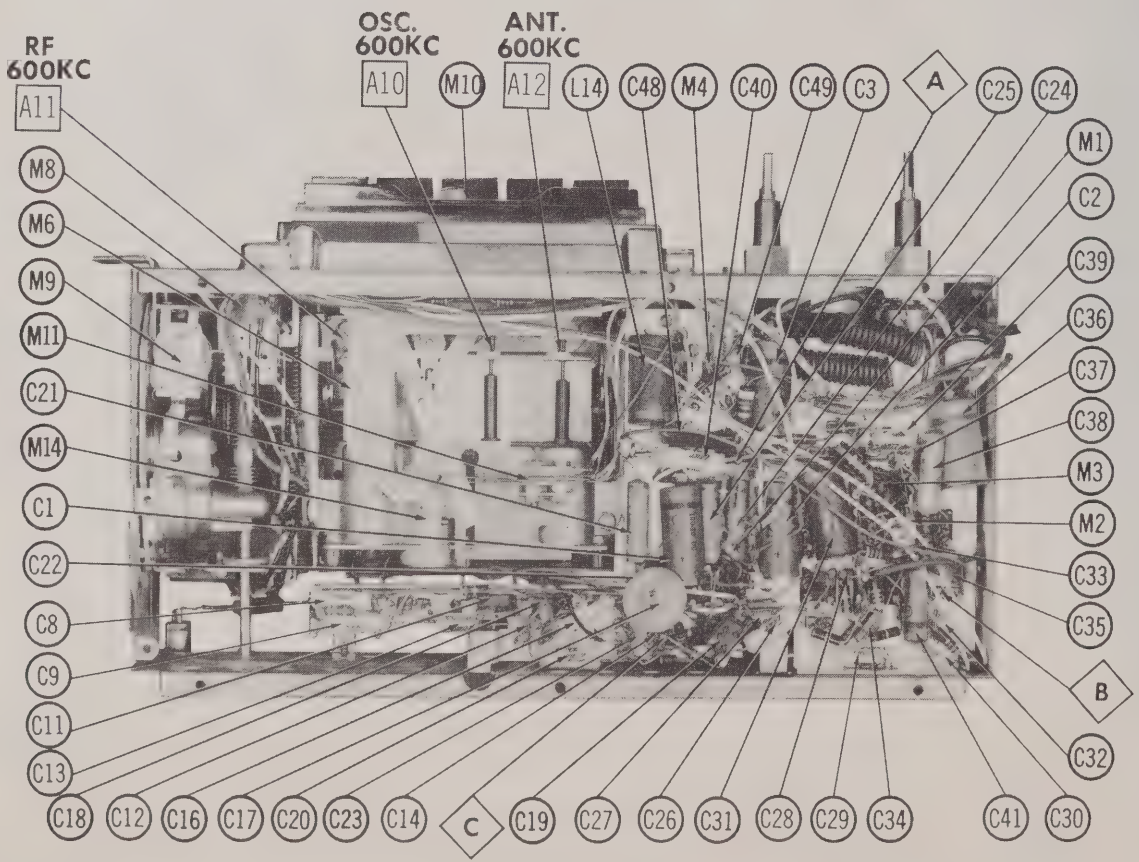
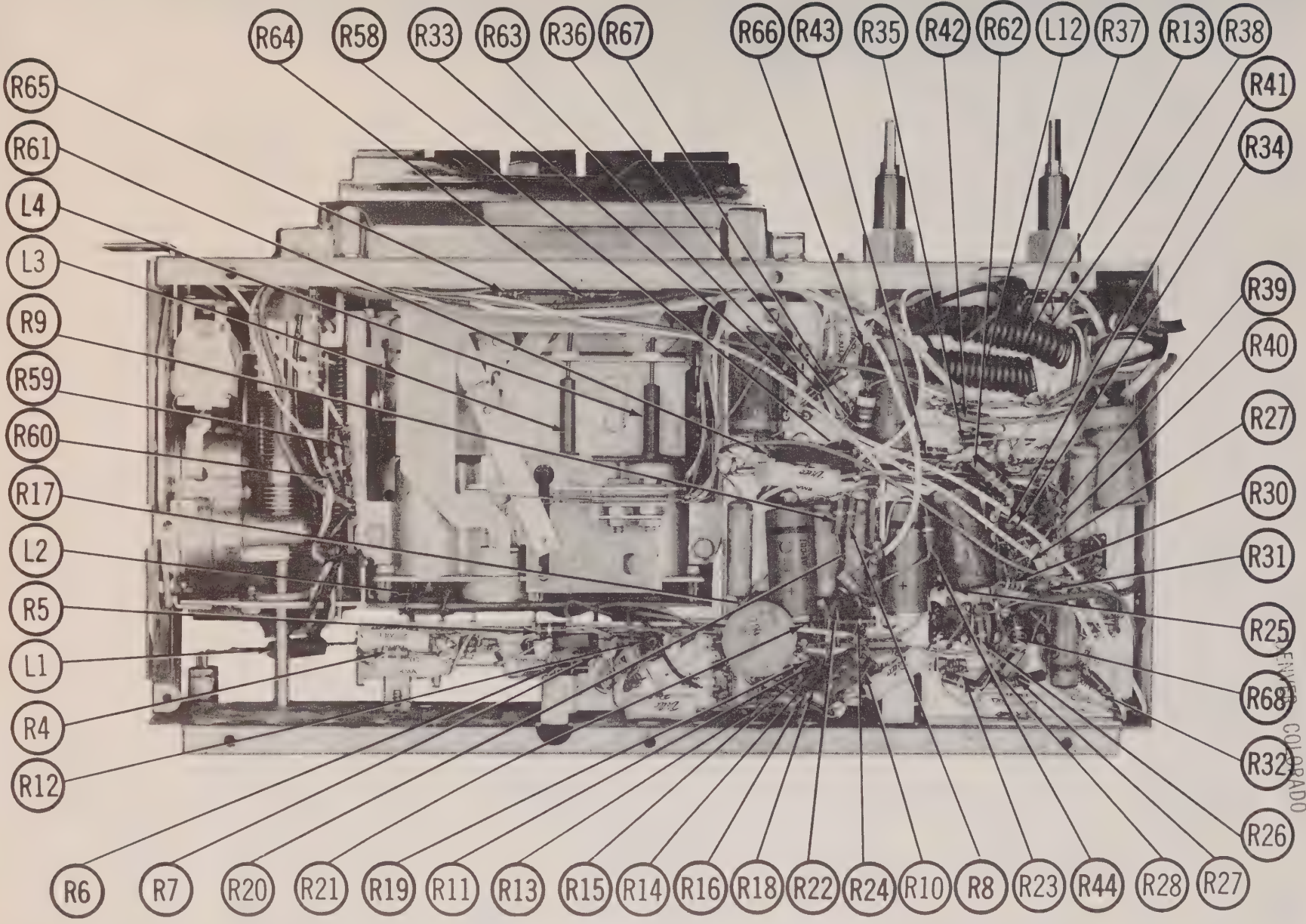


CHASSIS TOP VIEW



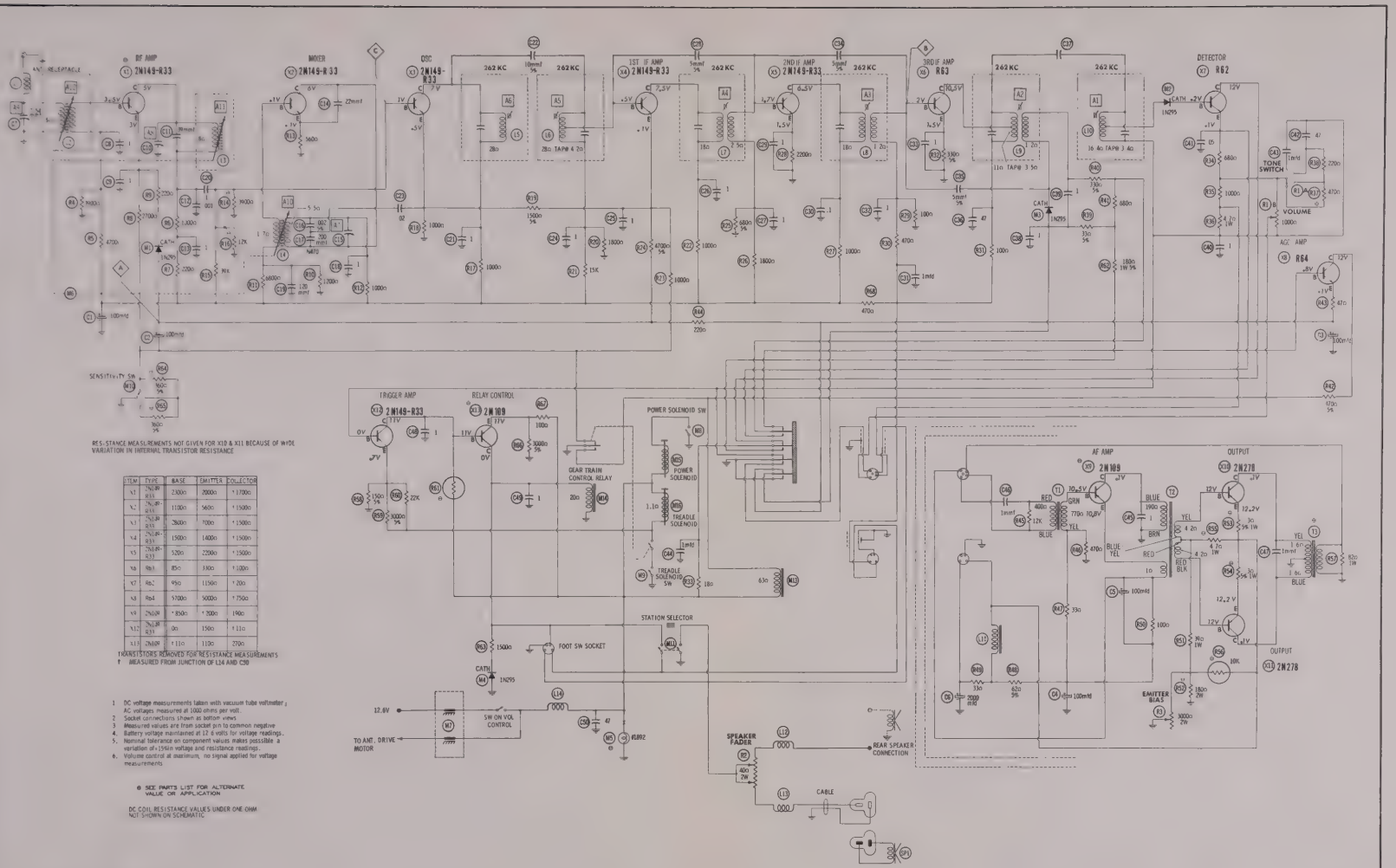
CHASSIS BOTTOM VIEW - CAPACITOR & MISCELLANEOUS IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE St.
DENVER, COLORADO

CADILLAC BROUGHAM
MODEL 7268085



RESISTANCE MEASUREMENTS NOT GIVEN FOR X10 & X11 BECAUSE OF WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE

ITEM	TYPE	BASE	EMITTER	COLLECTOR
X1	2N149-R33	2300Ω	2000Ω	†17000Ω
X2	2N149-R33	1100Ω	560Ω	†15000Ω
X3	2N149-R33	2800Ω	700Ω	†15000Ω
X4	2N149-R33	1500Ω	1400Ω	†15000Ω
X5	2N149-R33	520Ω	2200Ω	†15000Ω
X6	R63	85Ω	330Ω	†100Ω
X7	R62	95Ω	1150Ω	†20Ω
X8	R64	5700Ω	9000Ω	†750Ω
X9	2N109	†850Ω	†200Ω	190Ω
X10	2N278	0Ω	150Ω	†11Ω
X11	2N109	†11Ω	110Ω	270Ω

TRANSISTORS REMOVED FOR RESISTANCE MEASUREMENTS
† MEASURED FROM JUNCTION OF L14 AND C28

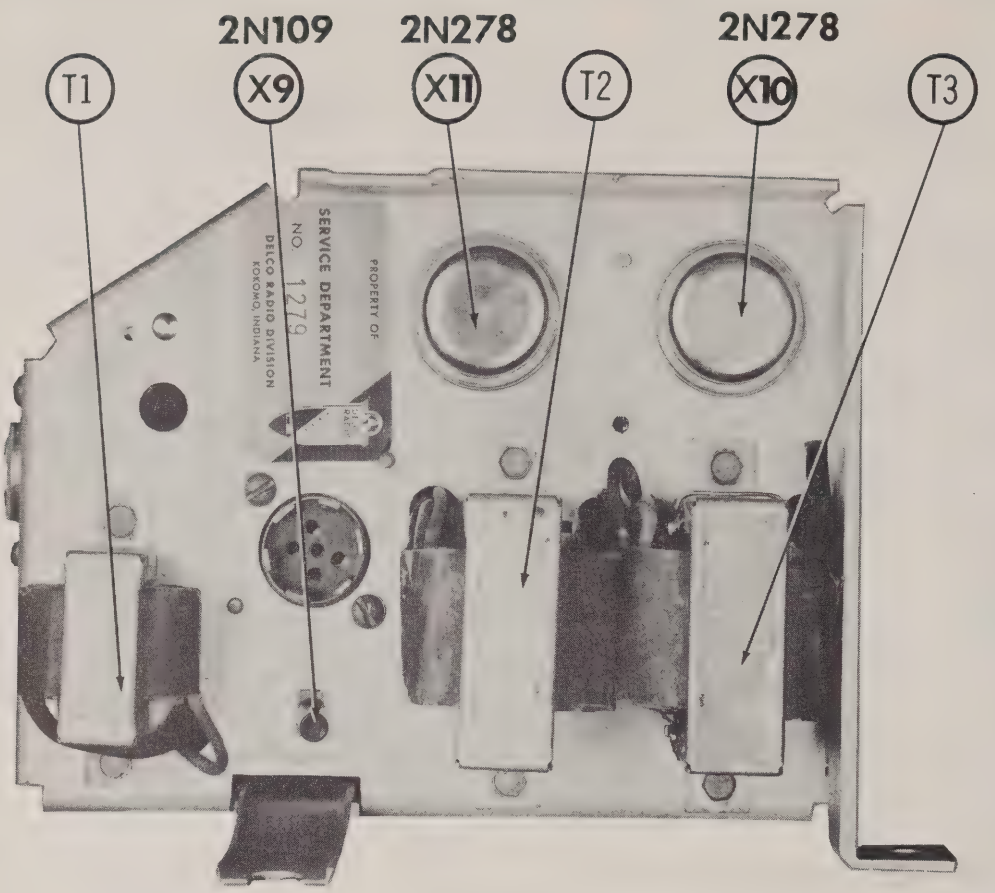
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

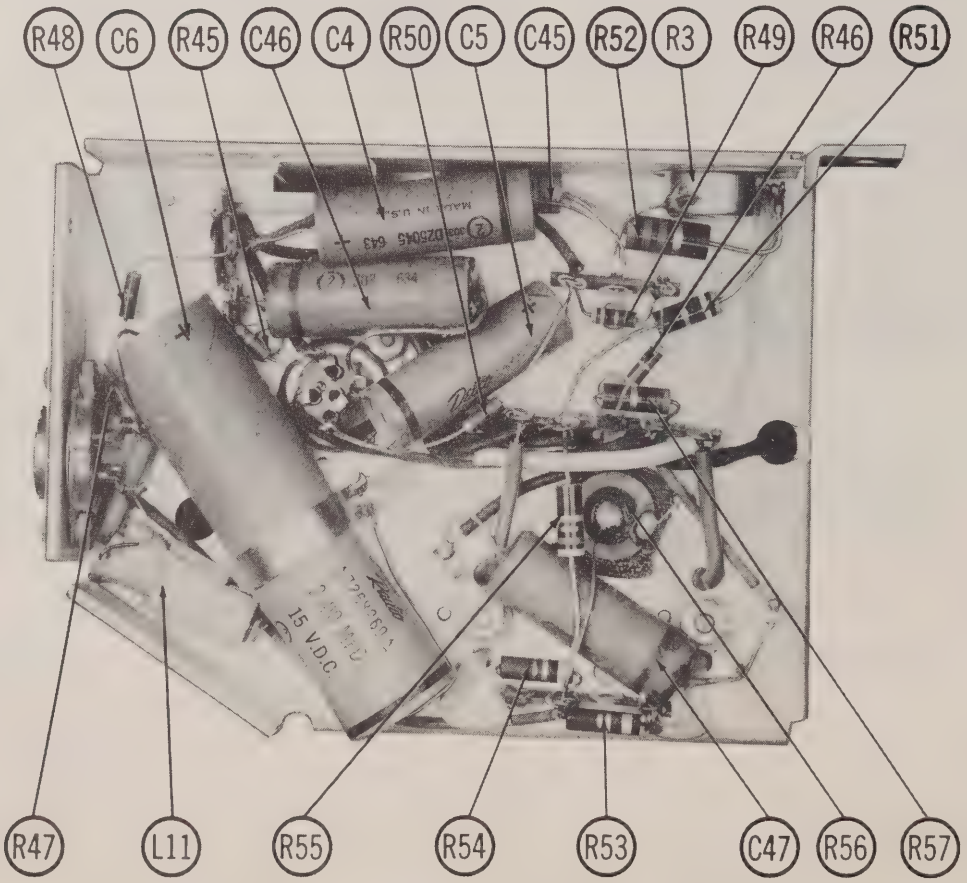
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co. Inc. 1959

389-6



OUTPUT CHASSIS - TOP VIEW



OUTPUT CHASSIS - BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N149-R33	RF Amplifier	2N440			A 2N150-R34 may be used in some versions.
X2	2N149-R33	Mixer	2N439			
X3	2N149-R33	Oscillator	2N439			
X4	2N149-R33	1st IF Amplifier	2N439			
X5	2N149-R33	2nd IF Amplifier	2N439			
X6	R-63	3rd IF Amplifier				
X7	R-62	Detector				
X8	R-64	AGC Amplifier				
X9	2N109	AF Amplifier	2N180	2N360		
X10	2N278	Output				
X11	2N278	Output				
X12	2N149-R33	Trigger Amplifier	2N439			
X13	2N109	Relay Control	2N180	2N360		

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	DELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	100	10	7269784	PRS12V100	BBR100-15	TC2501	TP-100-15	MTH-1210	TVA-1130
C2	100	10	7269784	PRS12V100	BBR100-15	TC2501	TD-100-15	MTH-1210	TVA-1130
C3	100	10	7269784	PRS12V100	BBR100-15	TC2501	TD-100-15	MTH-1210	TVA-1130
C4	100	25	7268285	PRS25V100	BBR100-25	TC2501	TD-100-25	MTH-2510	TVA-1207
C5	100	25	7268285	PRS25V100	BBR100-25	TC2501	TD-100-25	MTH-2510	TVA-1207
C6	2000	15	7268269		BR20001	TC1501	TD-1000-15		R2525 *
						TC1501	TD-1000-15		

* Non Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	DELCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C7	7-54		7269656							
C8	.1	100	7269776						TG-P10	
C9	.1	100	7269776						TG-P10	
C10			7269740							
C11	39		G-390	1468-000039	D6-390	5W5Q39	GP-39	UC-5439	1FM-439	
C12	.001	100	7269778	P288N-001	D6-102	CUB2D1	GP-1000	UC-521	5GA-D1	
C13	.1	100	7269776						TG-P10	
C14	22		G-220	1468-000022	D6-220	5W5Q22	GP-22	UC-5422	1FM-422	
C15			7269984							
C16	.002	100	7269782							5%
C17	200		7269783							N470
C18	.1	100	7269776						TG-P10	
C19	120		G-121	1468-00012	D6-121	5W5T12	GP-120		1FM-312	
C20	.1	100	7269776						TG-P10	
C21	.1	100	7269776						TG-P10	
C22	10		7269625	1469-00001	TCZ-10	22R5Q1	TCO-10	ZT-541	MS-41	5%
C23	.02	100	7269777							
C24	.1	100	7269776						TG-P10	
C25	.1	100	7269776						TG-P10	
C26	.1	100	7269776						TG-P10	
C27	.1	100	7269776						TG-P10	
C28	5		7269624	1469-000005	TCZ-4R7	22R5V5	TCO-5	ZT-555	MS-55	5%
C29	.1	100	7269776						TG-P10	
C30	.1	100	7269776						TG-P10	
C31	1.0	50	7269779							
C32	.1	100	7269776						TG-P10	
C33	.1	100	7269776						TG-P10	
C34	5		7269624	1469-000005	TCZ-4R7	22R5V5	TCO-5	ZT-555	MS-55	5%
C35	5		7269624	1469-000005	TCZ-4R7	22R5V5	TCO-5	ZT-555	MS-55	5%
C36	.47	50	7269780						2TM-P47	
C37	10		7269625	1469-00001	TCZ-10	22R5Q1	TCO-10	ZT-541	MS-41	5%
C38	.1	100	7269776						TG-P10	
C39	.1	100	7269776						TG-P10	

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	DELCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C40	.1	100	7269776						TG-P10	
C41	.05	100	7269781						TG-S50	
C42	.47	100	6692	P288N-47		CUB2P47			2TM-P47	
C43	1.0	100	7268522	P288N-1.0		CUB2W1			2TM-M1	
C44	1.0	50	7269779						2TM-M1	
C45	.1	100	7271042	P288N-1	DF-104	CUB2P1		GEM-201	TG-P10	
C46	1.0	100	7268522						2TM-M1	
C47	1.0	100	7268522	P288N-1.0		CUB2W1		GEM-21	2TM-M1	
C48	.1	100	7269776	P288N-1	DF-104	CUB2P1		GEM-201	TG-P10	
C49	.1	100	7269776						TG-P10	
C50	.47	100	6692	P288N-47		CUB2P47		GEM-2047	2TM-P47	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	DELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	Switch		7269483					Tone
B	1000Ω	½						Volume
C	Switch							Power ON-OFF
R2	40Ω	2	7269482					Speaker Fader (Wirewound)
R3	3000Ω	2	7269743		39-3000			Emitter Bias (Wirewound)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		DELCO PART No.	NOTES
	OHMS	WATT		
R4	3900Ω		1132	
R5	4700Ω		1133	
R6	1000Ω		1125	
R7	220Ω		1117	
R8	2700Ω		1130	
R9	220Ω		1117	
R10	1200Ω		1126	
R11	6800Ω		1135	
R12	1000Ω		1125	
R13	560Ω		1122	
R14	3900Ω		1132	Note 1
R15	39K		1218	
R16	12K		1212	Note 2
R17	1000Ω		1125	
R18	1000Ω		1125	
R19	1500Ω 5%		1219488	
R20	1800Ω		1128	
R21	15K		1213	
R22	1000Ω		1125	
R23	1000Ω		1125	
R24	4700Ω 5%		7269772	
R25	680Ω 5%		1219493	
R26	1800Ω		1128	
R27	1000Ω		1125	
R28	2200Ω		1129	
R29	100Ω		7299767	
R30	470Ω		1121	
R31	100Ω		7269767	
R32	330Ω 5%		7269768	
R33	18Ω		1104	
R34	680Ω		1123	
R35	1000Ω		1125	

ITEM No.	RATING		DELCO PART No.	NOTES
	OHMS	WATT		
R36	4.7Ω	1	1097	
R37	470Ω		1121	Note 3
R38	220Ω		1117	
R39	33Ω 5%		7271112	
R40	330Ω 5%		7269768	
R41	680Ω		1123	
R42	470Ω 5%		1219487	
R43	47Ω		1109	
R44	220Ω		1117	
R45	12K		1212	
R46	470Ω		1121	
R47	33Ω		1107	
R48	62Ω 5%		1213215	
R49	33Ω		1107	
R50	100Ω		1113	
R51	39Ω	1	1108	
R52	180Ω	2	7269770	Note 4
R53	0.3Ω 5%	1	7268273	Note 5
R54	0.3Ω 5%	1	7268273	Note 5
R55	4.7Ω	1	1097	Note 6
R56	10K		1513424	Note 7
R57	82Ω	1	1149	
R58	150Ω 5%		1189	
R59	3000Ω 5%		7269773	
R60	22K		1215	
R61			1221013	Note 7
R62	180Ω 5%	1	7269770	
R63	1500Ω		1127	
R64	360Ω 5%			Note 8
R65	360Ω 5%			Note 8
R66	3000Ω 5%		7269773	
R67	100Ω		1113	
R68	470Ω		1121	

Note 1. Some versions may use 3000Ω 5% in this application (Part #7269773).
Note 2. Not used in some versions.
Note 3. Some versions may use 220Ω in this application (Part #1117).
Note 4. Some versions may use 100Ω in this application (Part #1113).
Note 5. Versions after serial #HD80 use two .56Ω resistors in parallel in this application (Part #7270331).
Note 6. Versions after serial #HD80 use 39Ω in this application (Part #1108).
Note 7. Temperature compensating unit.
Note 8. Part of sensitivity switch (M10).

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (INTERSTAGE)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	DELCO PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	7:	1	7269336						

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.1	DELCO PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	4.5:	1	7269339						
		SEC.2							
	35:	1							

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	DELCO PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T3	138Ω	6-8Ω	7268193 ①						① Versions above serial #HD80 use Part #7270327

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	DELCO PART No.	QUAM PART No.	
SP1	6" X 9"	PM	6-8Ω	7269616	69A3Z8.6	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		DELCO PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Antenna Coil	7255738	19-1004	BC-565	4610	6 Microhenries
L2	Ant. Trans.	1221105				
L3	RF Coil	1221050				
L4	Osc. Coil	1221104				
L5	1st IF Pri.	1221001				
L6	1st IF Sec.	1221003				
L7	2nd IF Trans.	1221005				
L8	3rd IF Trans.	1221007				
L9	4th IF Pri.	1221009				
L10	4th IF Sec.	1221011				
L11	"A" Supply Choke	7265642				187 Microhenries
L12	Spkr. Lead Choke	1217846	19-1001	BC-562	4604	1.4 Microhenry
L13	Spkr. Lead Choke	1217846	19-1001	BC-562	4604	1.4 Microhenry
L14	"A" Lead Choke	7258554				1.7 Microhenry

PARTS LIST AND DESCRIPTIONS (Continued)

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		DELCO PART No.	CBS PART No.	SYLVANIA PART No.	
M1	1N295	7269746	1N60	1N34A	AGC Delay
M2	1N295	7269746	1N60	1N34A	AM Detector
M3	1N295	7269746	1N60	1N34A	AGC Rectifier
M4	1N295	7269746	1N60	1N34A	Relay Control Clamper

MISCELLANEOUS

ITEM No.	PART NAME	DELCO PART No.	NOTES
M5	Pilot Light	274020	#1892 (Not used in some versions)
M6	Tuner		
M7	Spark Plate	1220308	
M8	Switch	7268030	Power Solenoid
M9	Switch	7268030	Treadle Solenoid
M10	Switch	7269755	Sensitivity
M11	Switch	1220983	Station Selector
M12	Switch	1220982	Antenna Override
M13	Relay	7263471	4 Section
M14	Relay	7269296	Gear Train Control
M15	Solenoid	7268040	Power
M16	Solenoid	7268050	Treadle

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial Glass	7269448	
Escutcheon	7269758	
Knob	1466055	ON-OFF-Volume, Tuning
Knob	1466056	Tone, Speaker Fader
Dial Pointer	1220999	
Pushbutton	1220974	Set of Five (Includes front bearing plate)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire ..... Use BELDEN No. 8885
Bonding Strap ..... Use BELDEN No. 8661

PHOTOFACT* Folder

*TRADE MARK

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

CHALLENGER MODEL CHA10

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

CHALLENGER
MODEL CHA10

CHALLENGER
MODEL CHA10

TRADE NAME	Challenger Model CHA10
MANUFACTURER	Challenger Amplifier Co., P. O. Box 500, Paramus, N. Y.
TYPE SET	AC Operated 2 Channel 10 Watt Audio Amplifier
TUBES (Four)	Types 6AV6 Mic Preamplifier, 6AU6 AF Amplifier, 6L6GB Output, EZ81/6BW4 Rectifier
POWER SUPPLY	110-120 Volts AC - 60 Cycles RATING .53 Amp. @ 117 Volts AC (52 Watts)

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1958 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America

H307

PARTS LIST AND DESCRIPTIONS

CHALLENGER MODEL CHA10

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Mic Preamplifier	6AV6	
V2	AF Amplifier	6AU6	
V3	Output	6L6GB	
V4	Rectifier	EZ81/6BW4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA CHALLENGER PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	5	450		AFH4-09	D0080	WP433. 6	TMQ-9	Q-610	TVL-4759. 7
B	▲5	450							
C	▲5	450							
D	■5	450							
C2	10	450		PRS450V10	BR1045	TC72	TD-10-450	MT-4510	TVA-1705
C3	20	50		PRS50V20	BBR20-150	TC45	TD-20-150	MT-1520	TVA-1410
C4	50	50		PRS50V50	BR505	TC39	TD-50-50	MT-0550	TVA-1308

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA CHALLENGER PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C5	.033	400		P488N-033	DF-303	CUB6S33		GEM-4133	6TM-S33	
C6	.033	400		P488N-033	DF-303	CUB6S33		GEM-4133	6TM-S33	
C7	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C8	.047	200		P288N-047	DF-503	CUB2S47		GEM-4147	2TM-S47	
C9	.1	200		P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C10	100			NPO-DI 100	DD-101	L10T1	ED-100	ZT-531	MS-31	10%
C11	.033	400		P488N-033	DF-303	CUB6S33		GEM-4133	6TM-S33	
C12	.033	400		P488N-033	DF-303	CUB6S33		GEM-4133	6TM-S33	
C13	1500					1R5D15	ED-1500		MS-215	10%

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA CHALLENGER PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	V367	B-60	A47-500K-Z	Q13-133	U48	Microphone
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R2A	500K	½	V367	B-60	A47-500K-Z	Q13-133	U48	Phono
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

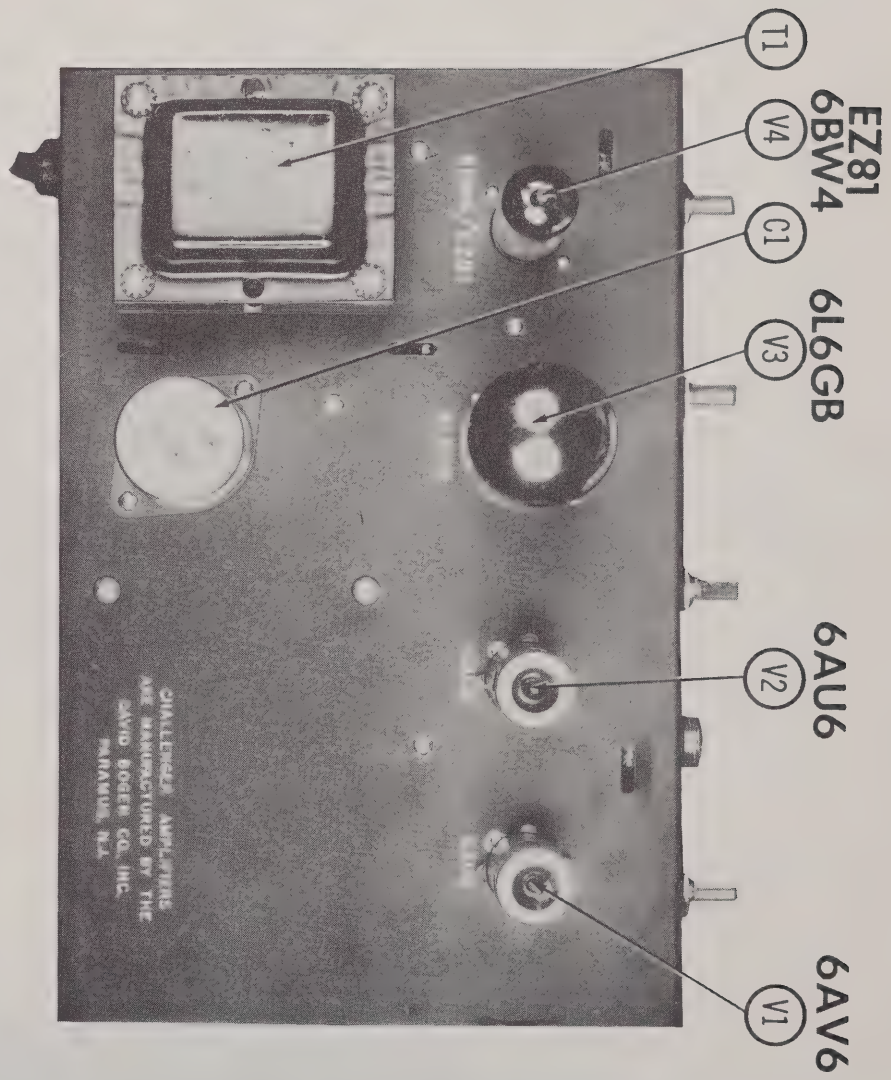
RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	CHALLENGER PART No.	NOTES
R3	3. 3meg			
R4	220K			
R5	470K			
R6	470K			
R7	220K			
R8	560K			
R9	2200Ω			
R10	100Ω			
R11	1000Ω			
R12	2200Ω			
R13	8200Ω			

ITEM No.	RATING OHMS	RATING WATT	CHALLENGER PART No.	NOTES
R14	8200Ω			
R15	470Ω			
R16	470K			
R17	270Ω	2		
R18	250Ω	7		
R19	3300Ω	2		
R20	47K			
R21	100K	2		
R22	100K	2		
R23	33Ω			
R24	33Ω			

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	CHALLENGER PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V ⓐ .53A	580VCT ⓐ .068A	6.3V ⓐ 2.6A		T3174				22R02 ①	R-5B

① Tape 5V winding and center tap on 6.3V winding.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	CHALLENGER PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	4500Ω	16Ω Tap ⓑ 8Ω,4Ω	T262-B	Z1109					

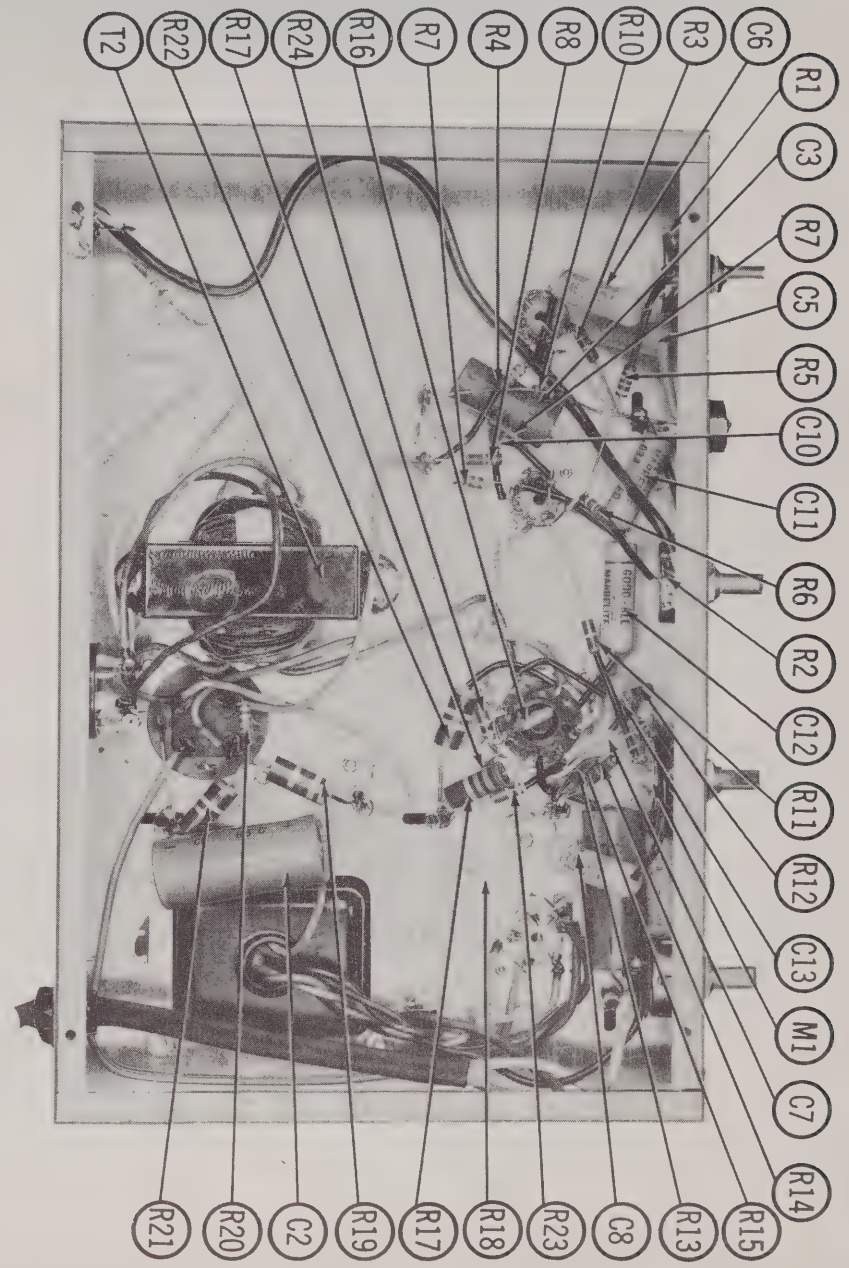
MISCELLANEOUS

ITEM No.	PART NAME	CHALLENGER PART No.	NOTES
M1	Switch	S499	Tone Selector (Rotary Wafer Type)
M2	Switch	S434	Power On-Off

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

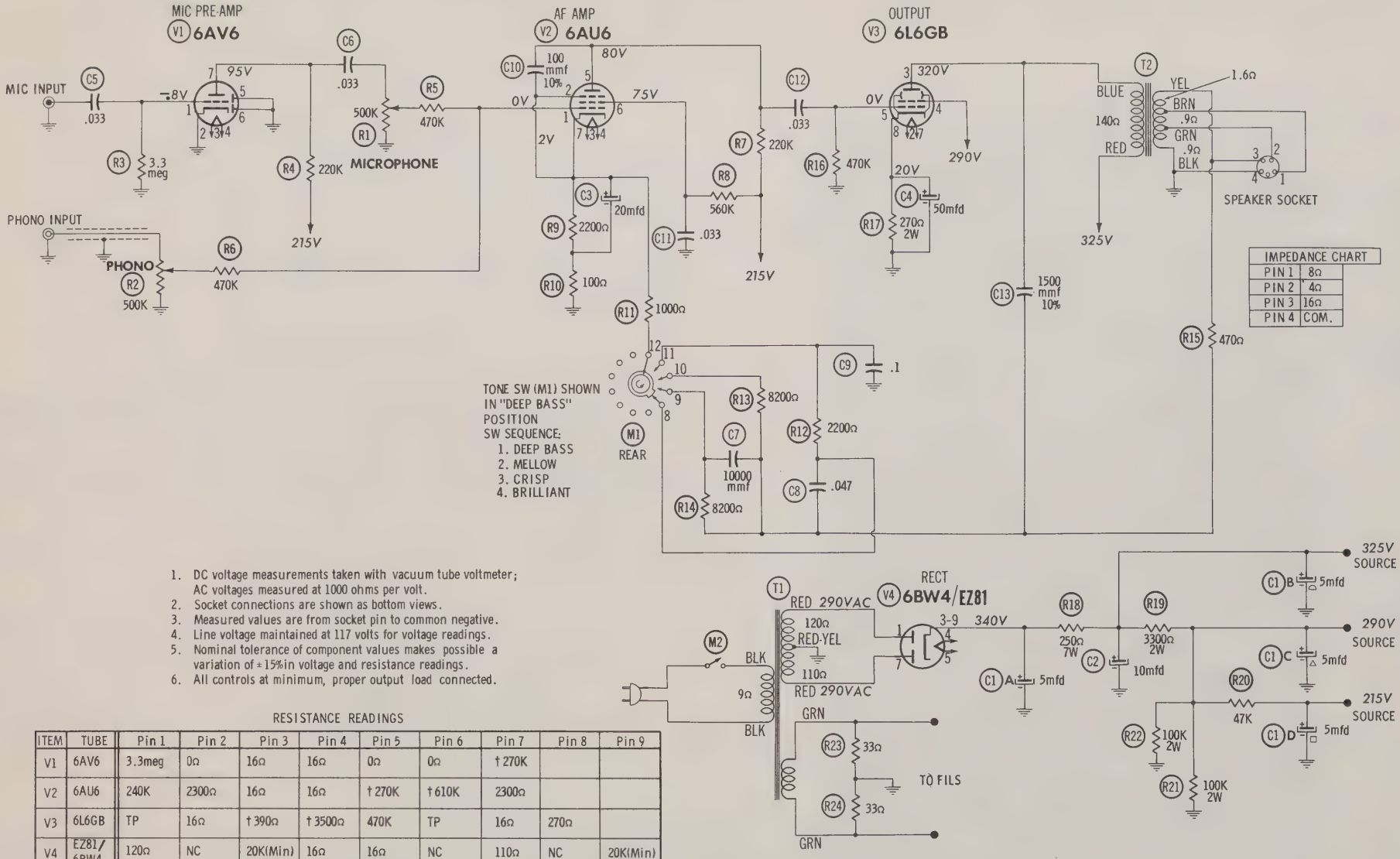
CHASSIS—BOTTOM VIEW



CHALLENGER MODEL CHA10

FOLDER 7

CHALLENGER MODEL CHA10



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6AV6	3.3meg	0Ω	16Ω	16Ω	0Ω	0Ω	†270K		
V2	6AU6	240K	2300Ω	16Ω	16Ω	†270K	†610K	2300Ω		
V3	6L6GB	TP	16Ω	†390Ω	†3500Ω	470K	TP	16Ω	270Ω	
V4	EZ81/ 6BW4	120Ω	NC	20K(Min)	16Ω	16Ω	NC	110Ω	NC	20K(Min)

† MEASURED FROM PIN 3 OF V4
TP TIE POINT
NC NO CONNECTION

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

PHOTOFACT* Folder
*TRADE MARK
EIA ELECTRONIC INDUSTRIES ASSOCIATION MEMBER

DAVID BOGEN MODEL LX30

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

DAVID BOGEN
MODEL LX30

DAVID BOGEN
MODEL LX30

TRADE NAME	David Bogen Model LX30
MANUFACTURER	David Bogen Co., Inc., P. O. Box 500, Paramus, N. J.
TYPE SET	AC Operated 7 Channel 30 Watt Audio Amplifier
TUBES	Ten
POWER SUPPLY	110-120 Volts AC - 60 Cycles RATING .85 Amp. @ 117 Volts AC (90 Watts)

VOLTAGE REGULATOR ADJUSTMENT (R8)

If V6, V7 or V8 is replaced, the "Volt Reg" control (R8) should be adjusted. To do this, turn the "Volt Reg" (R8) and all volume controls (R1, R2, R3, R4) to minimum. Turn the unit on and allow a four minute warm-up period. Connect the positive probe of a low range DC voltmeter to pin 3 of V6, negative lead to chassis. Turn the "Volt Reg" control until a slight needle deflection is observed. Note this voltage. Measure the voltage on pin 3 of V7. Connect the meter to the pin (pin 3 of V6 or pin 3 of V7) that measures the highest voltage. Turn the "Volt Reg" control until the meter indicates .25 volts DC.

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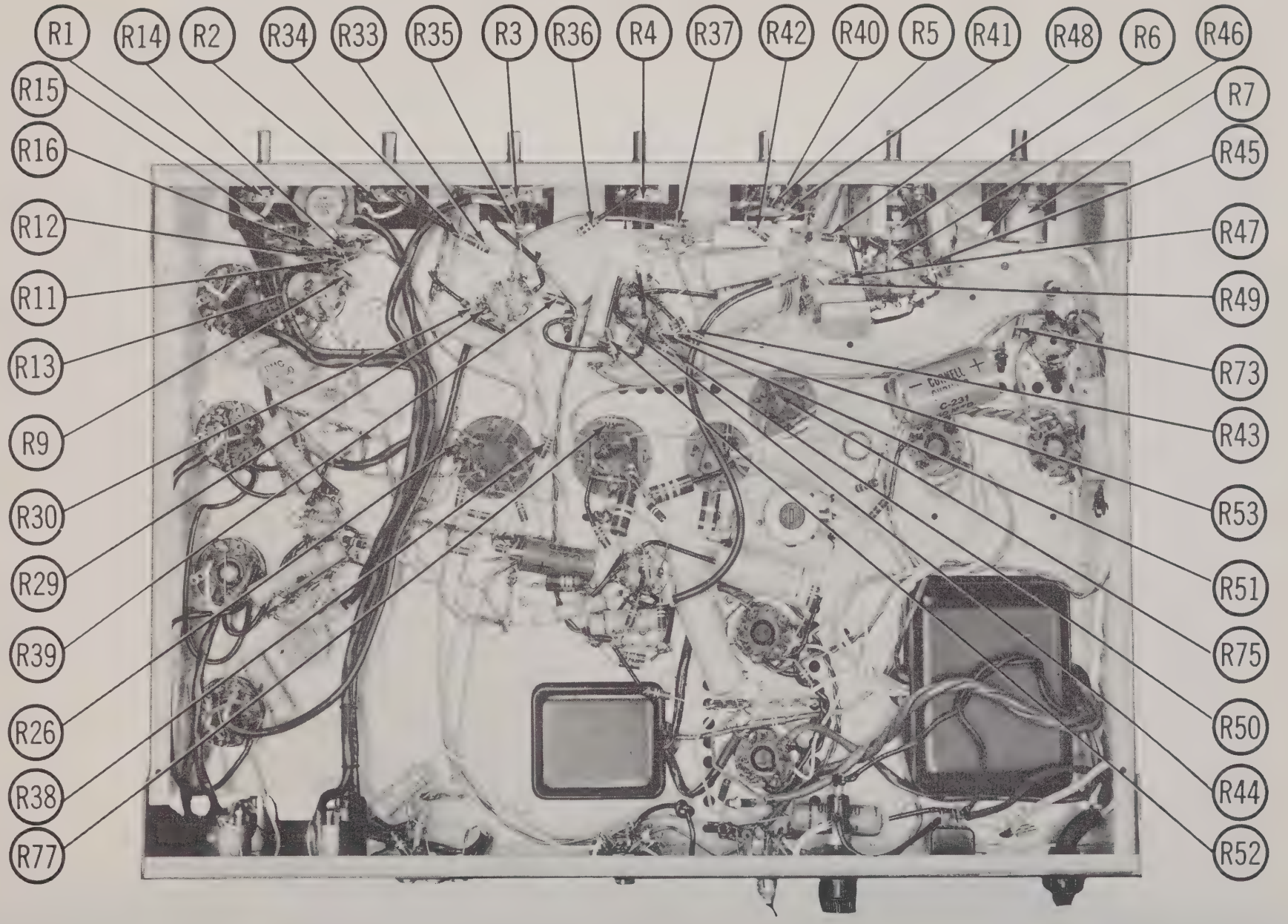
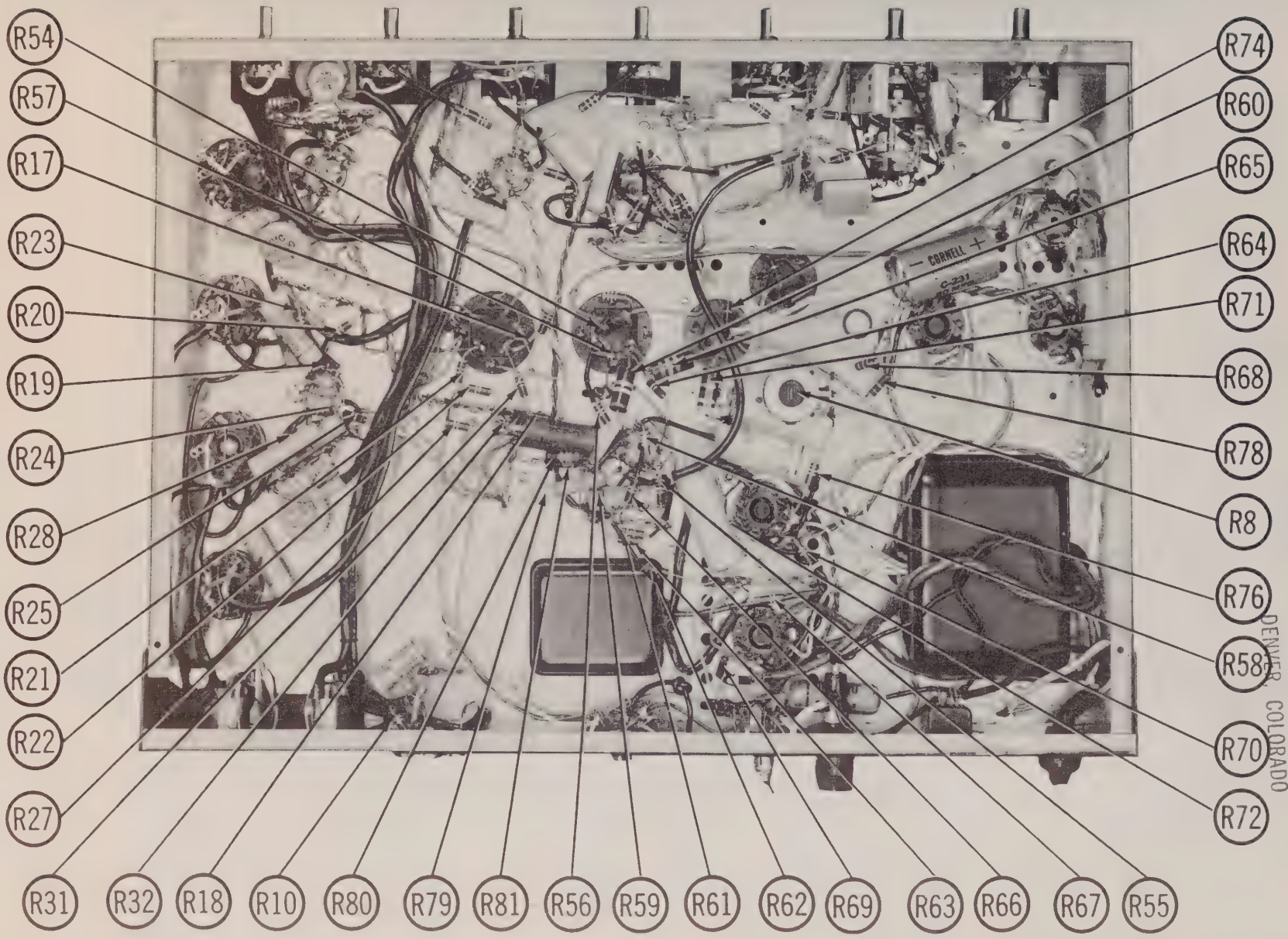


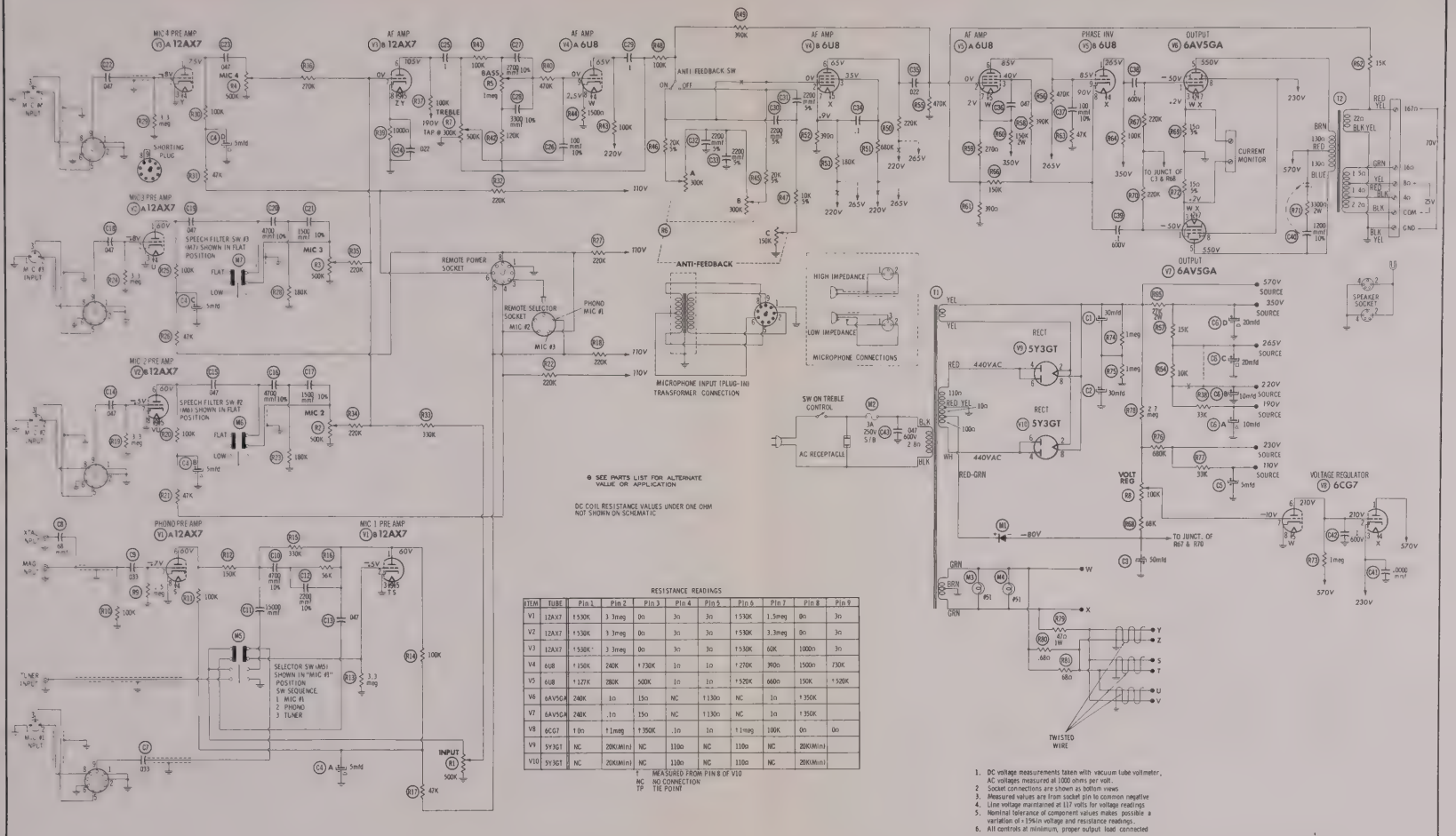
CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



CHASSIS-BOTTOM VIEW-RESISTOR IDENTIFICATION

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE St.
DENVER, COLORADO

DAVID BOGEN
MODEL LX30



⊕ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC

RESISTANCE READINGS

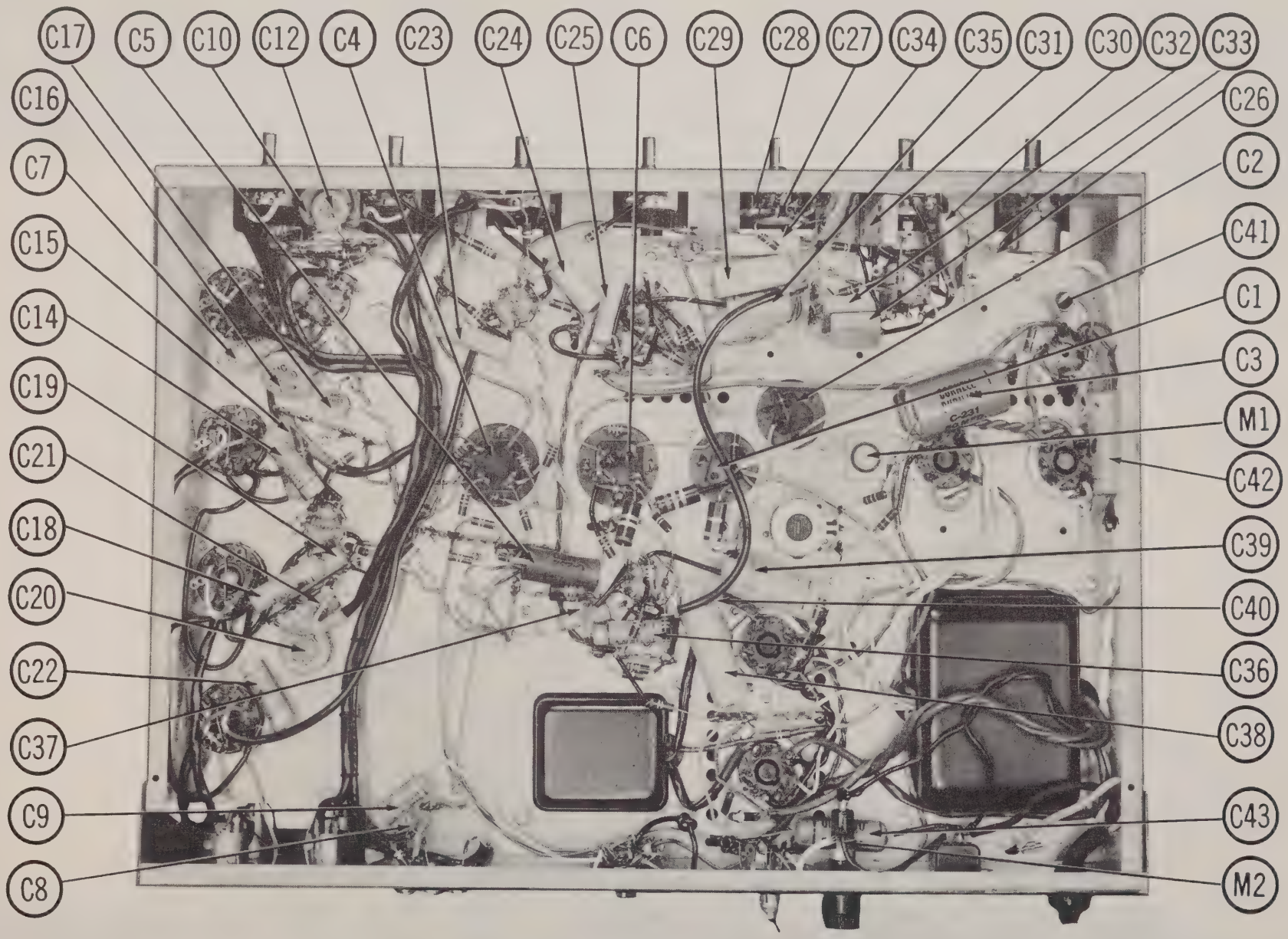
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†530K	3.3meg	0Ω	3Ω	3Ω	†530K	1.5meg	0Ω	3Ω
V2	12AX7	†530K	3.3meg	0Ω	3Ω	3Ω	†530K	3.3meg	0Ω	3Ω
V3	12AX7	†530K	3.3meg	0Ω	3Ω	3Ω	†530K	60K	1000Ω	3Ω
V4	6U8	†150K	240K	†730K	1Ω	1Ω	†270K	390Ω	1500Ω	730K
V5	6U8	†127K	280K	500K	1Ω	1Ω	†520K	660Ω	150K	†520K
V6	6AV5GA	240K	1Ω	15Ω	NC	†130Ω	NC	1Ω	†350K	
V7	6AV5GA	240K	1Ω	15Ω	NC	†130Ω	NC	1Ω	†350K	
V8	6CG7	†0Ω	†1meg	†350K	.1Ω	1Ω	†1meg	100K	0Ω	0Ω
V9	5Y3GT	NC	20KMin‡	NC	110Ω	NC	110Ω	NC	20KMin‡	
V10	5Y3GT	NC	20KMin‡	NC	110Ω	NC	110Ω	NC	20KMin‡	

† MEASURED FROM PIN 8 OF V10
NC NO CONNECTION
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views
3. Measured values are from socket pin to common negative
4. Line voltage maintained at 117 volts for voltage readings
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

389-8



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Phono Preamp. - Mic 1 Preamp.	12AX7	
V2	Mic 2 Preamp. - Mic 3 Preamp.	12AX7	
V3	Mic 4 Preamp. - AF Amp.	12AX7	
V4	AF Amplifier	6U8	
V5	AF Amp. - Phase Inv.	6U8	
V6	Output	6AV5GA	
V7	output	6AV5GA	
V8	Voltage Regulator	6CG7	
V9	Rectifier	5Y3GT	
V10	Rectifier	5Y3GT	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	David Bogen PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	30	400		AFH1-51	A0470	FP145	TMS-56	S-265	TVL-1720
C2	30	400		AFH1-51	A0470	FP145	TMS-56	S-265	TVL-1720
C3	50	100		PRS150V50	BR5015	TC49	TD-50-150	MT-1550	TVA-1414
C4A	▲5	200		AFH4-09	D0080	WP433. 6	TMQ-9	Q-027	TVL-4759. 7
B	▲5	200							
C	5	200							
D	■5	200							
C5	5	200		PRS250V4	BBR4-250	TC50X	TD-4-250	MT-4504	TVA-1501
C6A	▲10	350		AFH4-90	D0179. 3	FP474. 5	TMQ-113	Q-035 MT-4510	R2290 *
B	10	350							
C	■20	450							
D	▬20	450							

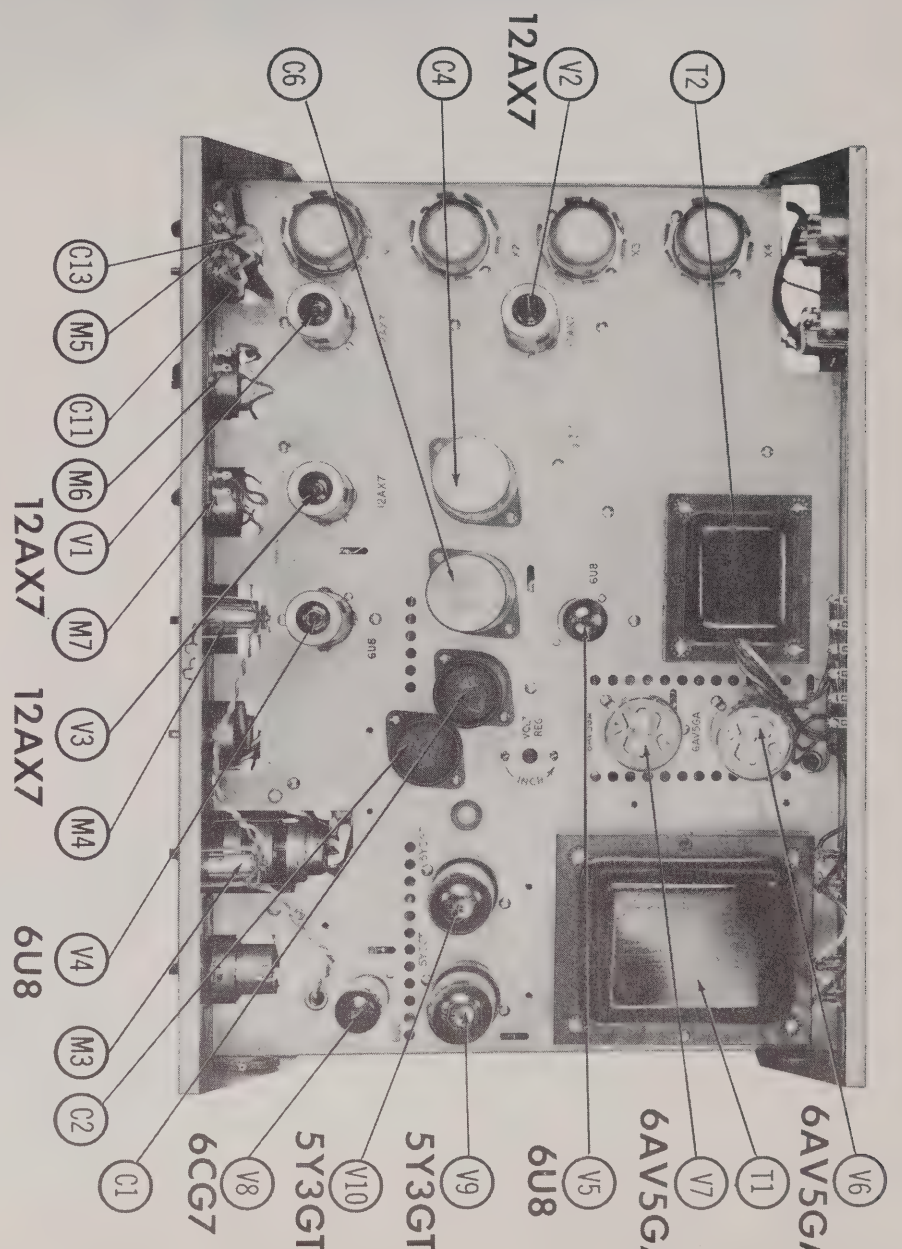
* Non Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	David Bogen PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C7	.033	200		P288N-033	DF-303	CUB6S33		GEM-4133	6TM-S33	
C8	68			BPD-000068	DD-680	L10Q68	ED-68	UC-5468	5GA-Q68	
C9	.033	200		P288N-033	DF-303	CUB6S33		GEM-4133	6TM-S33	
C10	4700					1R5D47	CY30C472K		MS-247	10%
C11	15000			BPD-015	DD16-153	BYB10S15	ED-015		5HK-S15	
C12	2200					1R5D22	CY20C222K		MS-222	10%
C13	.047	200		P288N-047	DF-503	CUB2S47		GEM-4147	2TM-S47	
C14	.047	200		P288N-047	DF-503	CUB2S47		GEM-4147	2TM-S47	
C15	.047	200		P288N-047	DF-503	CUB2S47		GEM-4147	2TM-S47	
C16	4700					1R5D47	CY30C472K		MS-247	10%
C17	1500					1R5D15	CY20C152K	MCB456	MS-215	10%
C18	.047	200		P288N-047	DF-503	CUB2S47		GEM-4147	2TM-S47	
C19	.047	200		P288N-047	DF-503	CUB2S47		GEM-4147	2TM-S47	
C20	4700					1R5D47	CY30C472K		MS-247	10%
C21	1500					1R5D15	CY20C152K	MCB456	MS-215	10%
C22	.047	200		P288N-047	DF-503	CUB2S47		GEM-4147	2TM-S47	
C23	.047	200		P288N-047	DF-503	CUB2S47		GEM-4147	2TM-S47	
C24	.022	200		P288N-022	DD-203	CUB4S22	ED-02	GEM-4122	2TM-S22	
C25	.1	200		P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C26	100			NPO-DI 100	D6-101	L10T1	ED-100	ZT-531	MS-31	10%
C27	2700					1R5D27	CY20C272K		MS-227	10%
C28	3300					1R5D33	CY20C332K		MS-233	10%
C29	.1	400		P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C30	2200			1464-0022		1R5D22	CY20C222J		MS-222	5%
C31	2200			1464-0022		1R5D22	CY20C222J		MS-222	5%
C32	2200			1464-0022		1R5D22	CY20C222J		MS-222	5%
C33	2200			1464-0022		1R5D22	CY20C222J		MS-222	5%
C34	.1	200		P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C35	.022	400		P488N-022	DD-203	CUB4S22	ED-02	GEM-4122	4TM-S22	
C36	.047	200		P288N-047	DF-503	CUB2S47		GEM-4147	2TM-S47	
C37	100			NPO-DI 100	D6-101	L10T1	ED-100	ZT-531	MS-31	10%
C38	.1	600		P688N-1	DF-104	CUB6P1		GEM-601	6TM-P1	
C39	.1	600		P688N-1	DF-104	CUB6P1		GEM-601	6TM-P1	
C40	1200					1R5D12	CY15C122K		MS-212	10%
C41	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C42	.1	600		P688N-1	DF-104	CUB6P1		GEM-601	6TM-P1	
C43	.047	600		P688N-047	DF-503	CUB6S47		GEM-6147	6TM-S47	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	David Bogen PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	500K	½	V367	B-60	A47-500K-Z	Q13-133	U48	Input
B	Shaft			Not Req.	FS-3	Not Req	Not Req.	
R2A	500K	½	V367	B-60	A47-500K-Z	Q13-133	U48	Mic 2
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R3A	500K	½	V367	B-60	A47-500K-Z	Q13-133	U48	Mic 3
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R4A	500K	½	V367	B-60	A47-500K-Z	Q13-133	U48	Mic 4
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R5A	1meg	½	V376	B-69	A47-1meg-S	Q11-137	U54	Bass
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R6A	300K	½	V396A					Anti-Feedback
B	300K	½						Anti-Feedback
C	150K	½						Anti-Feedback
D	Switch							
R7A	500K	½	V406	BT-64	A47F5-500K	Q19-133X	UT-431	Treble, Tap @ 300K
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			KB-1	SWE-12	76-1	US-26	Power On-Off
R8A	100K	½	V392A	AB-40	A47-100K-S	B11-128	TA15L	Volt Regulator
B	Shaft			AK-1	FKS-1/4	TM1-Kit	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		David Bogen PART No.	NOTES
	OHMS	WATT		
R9	1.5meg			
R10	100K			
R11	100K			
R12	150K			
R13	3.3meg			
R14	100K			
R15	330K			
R16	56K			
R17	47K			
R18	220K			
R19	3.3meg			
R20	100K			
R21	47K			
R22	220K			
R23	180K			
R24	3.3meg			
R25	100K			
R26	47K			
R27	220K			
R28	180K			
R29	3.3meg			
R30	100K			
R31	47K			
R32	220K			
R33	330K			
R34	220K			
R35	220K			
R36	270K			
R37	100K			
R38	33K			
R39	1000Ω			
R40	470K			
R41	100K			
R42	120K			
R43	100K			
R44	1500Ω			
R45	20K 5%			

ITEM No.	RATING		David Bogen PART No.	NOTES
	OHMS	WATT		
R46	20K 5%			
R47	10K 5%			
R48	100K			
R49	390K			
R50	220K			
R51	680K			
R52	390Ω			
R53	180K			
R54	10K			
R55	470K			
R56	470K			
R57	15K			
R58	390K			
R59	270Ω			
R60	150K	2		
R61	390Ω			
R62	15K			
R63	47K			
R64	100K			
R65	27K	2		
R66	150K			
R67	220K			
R68	68K			
R69	15Ω 5%			
R70	220K			
R71	3300Ω	2		
R72	15Ω 5%			
R73	1meg			
R74	1meg			
R75	1meg			
R76	680K			
R77	33K			
R78	2.7meg			
R79	0.47Ω	1		
R80	0.68Ω			
R81	0.68Ω			

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	David Bogen PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .85A	860VCT @ .068A Tap @ 38V @ .001A	5V @ 4A	6.3VCT @ 4.5A	T3154					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.1	David Bogen PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	5000Ω CT	70V (167Ω) SEC.2 16ΩTap @8Ω,4Ω	T2128						

RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	David Bogen PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1	.001A	H373	1263A	RS065	10	

FUSE

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			David Bogen PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	3AG	3A 250V S/B			313003. (3AG 3A 250V S/B)	342001	MDX3	HKP

MISCELLANEOUS

ITEM No.	PART NAME	David Bogen PART No.	NOTES
M3	Pilot Lamp		#51
M4	Pilot Lamp		#51
M5	Switch	S-475	Selector (Slide Type 3 Position)
M6	Switch	S-381	Speech Filter-2 (Slide Type DPDT)
M7	Switch	S-381	Speech Filter-3 (Slide Type DPDT)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

Low-Loss Shielded Lead (Interconnecting)..... Use BELDEN No. 8401

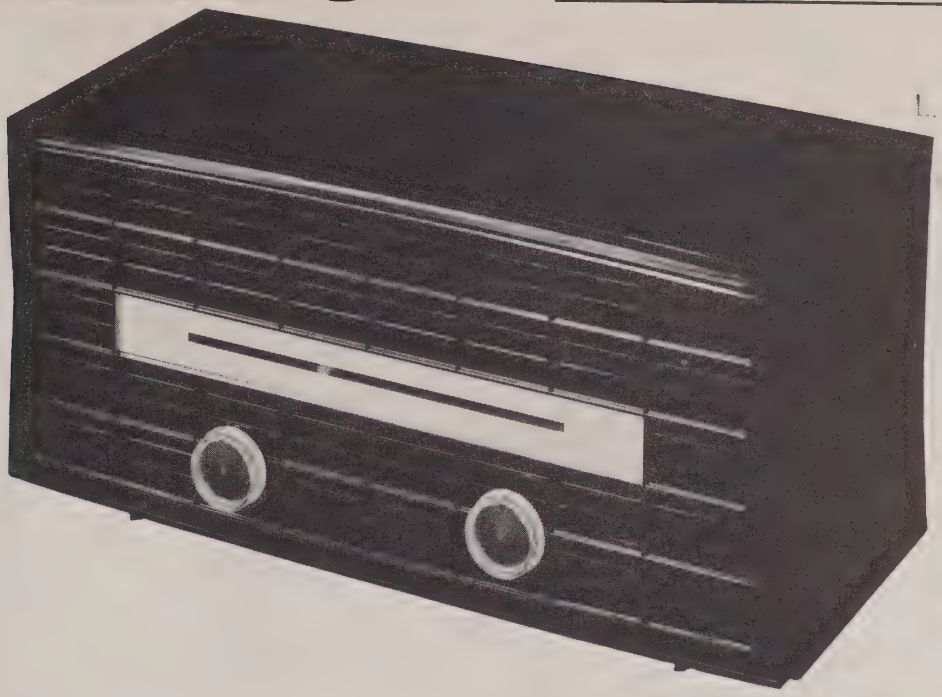
Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT* Folder
*TRADE MARK

GRANCO MODEL T-270

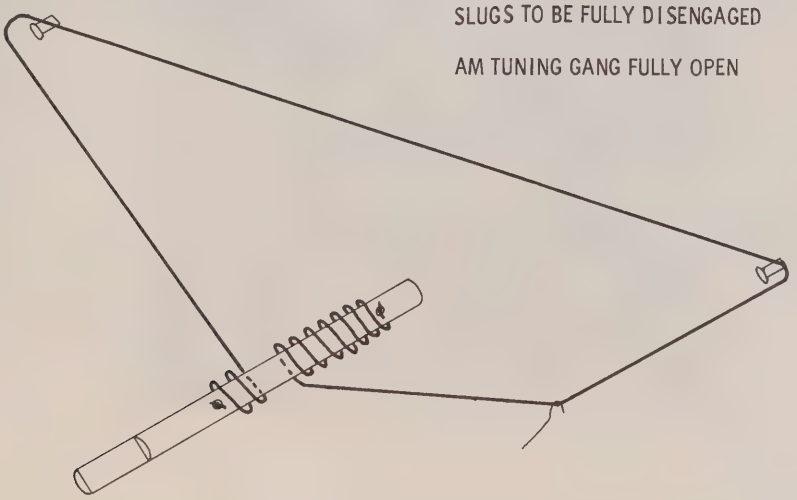
PROPERTY OF
L. F. BLANKENSHIP
[illegible] MEADE ST.
[illegible]VER, COLORADO

GRANCO
MODEL T-270



TRADE NAME	Granco Model T-270
MANUFACTURER	Granco Products, Inc., 36-07 20th Ave., Long Island City 5, N. Y.
TYPE SET	AC Operated FM-AM Tuner
TUBES (Six)	Types 6BA6 FM RF Amplifier, 12AT7 FM Mixer-FM Osc., 6BE6 AM Converter, 6BA6 1st FM-AM IF Amplifier, 6BA6 2nd FM IF Amp. -AM Det. -AVC, 6AL5 Ratio Detector
POWER SUPPLY	110-120 Volts AC-60 Cycles — RATING .28Amp. @117 Volts AC (25 Watts)
TUNING RANGE-BROADCAST	535-1650KC — FREQUENCY MOD. 88-108MC

GRANCO
MODEL T-270



DIAL CORD STRINGING

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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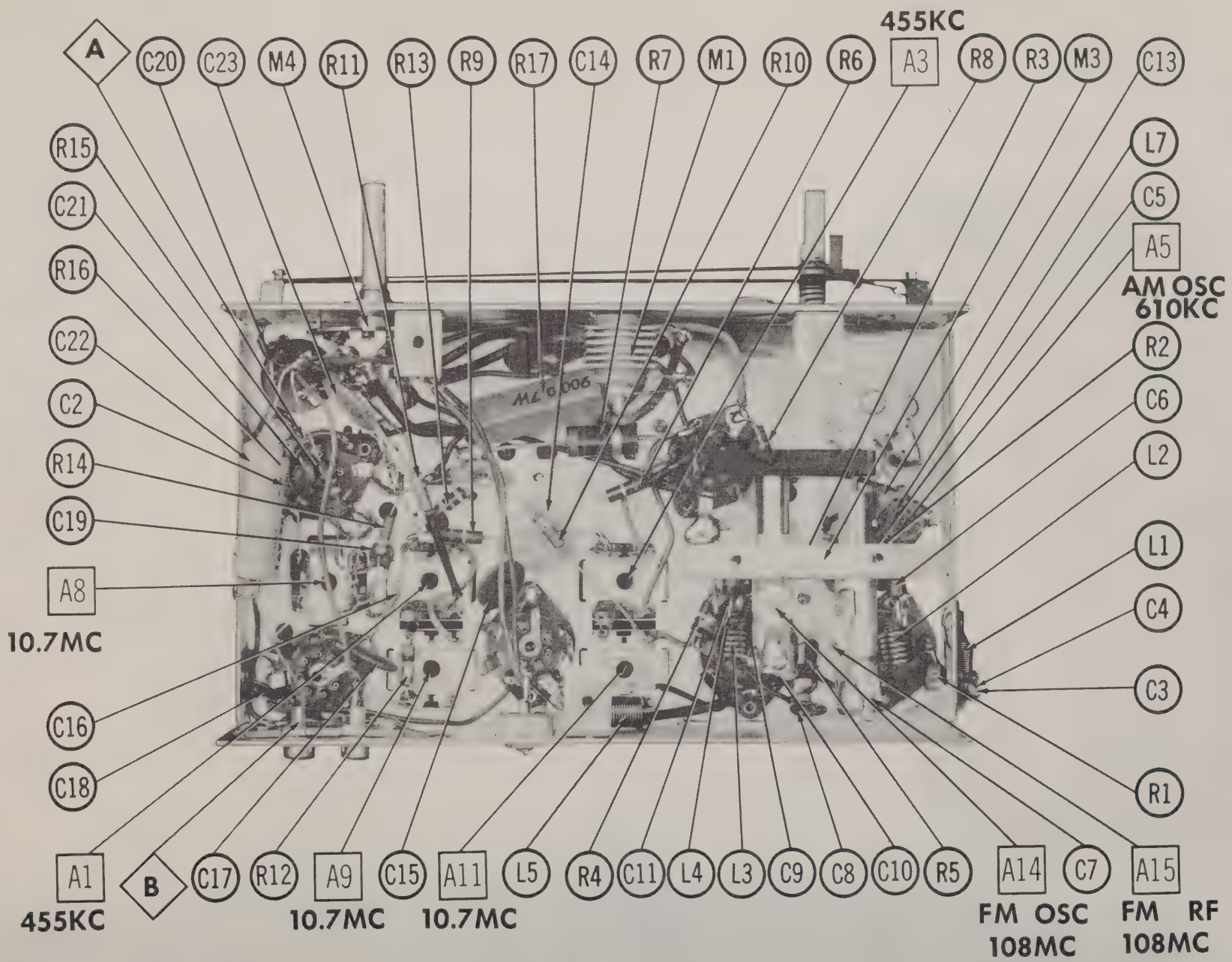


CHASSIS-BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	FM RF Amplifier	6BA6	
V2	FM Mixer-FM Osc.	12AT7	
V3	AM Converter	6BE6	
V4	1st FM-AM IF Amplifier	6BA6	
V5	2nd FM IF Amp. -AM Det. -AVC	6BA6	
V6	Ratio Detector	6AL5	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA GRANCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲ 80	150	41-5	AFH3-11-40	C0120	FP216	TMD-17	T-055	TVL-2442.1
B	■ 50	150							
C2	2	50	C-502	PRS50V2	BBR2-50	TC302	TD-2-50	MT-0502	TVA-1301

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA GRANCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C3	10		C504	NPO-SI10	D6-100	L10Q1	ED-10	ZT-541	5TCC-Q1	10%
C4	50		C-503	SI50	D6-500	LT6Q5	GP-50	UC-545	5GA-Q5	
C5										
C6										
C7	1500		C-499	BPD-0015	DD-152	BYA10D15	ED-1500	DC5215	5HK-D15	
C8	1500		C-651	BPD-0015	DD-152	BYA10D15	ED-1500	DC5215	5HK-D15	
C9	80		C-518							N1400 10%
C10	8.5		C-501							N150 10%
C11	2000									
C12	1500		C-651	BPD-0015	DD-152	BYA10D15	ED-1500	DC5215	5HK-D15	
C13	5									N1400 10%
C14	10000		C-500	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C15	5000			BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	10%
C16	680		C-626							N1400 10%
C17	5000			BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	10% ①
C18	1500		C-499	BPD-0015	DD-152	BYA10D15	ED-1500	DC5215	5HK-D15	
C19	220		C-544	BPD-00022	DD-221	L10T22	ED-220	UC-5322	5GA-T22	
C20	1500		C-651	BPD-0015	DD-152	BYA10D15	ED-1500	DC5215	5HK-D15	
C21	1500		C-651	BPD-0015	DD-152	BYA10D15	ED-1500	DC5215	5HK-D15	
C22	.1	200	C-543	P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C23	10000		C-500	BPD-01	DD-104	BYA6S1	ED-01	DC511	5HK-S1	

① Some versions use 1500mmf in this application Part #C-499

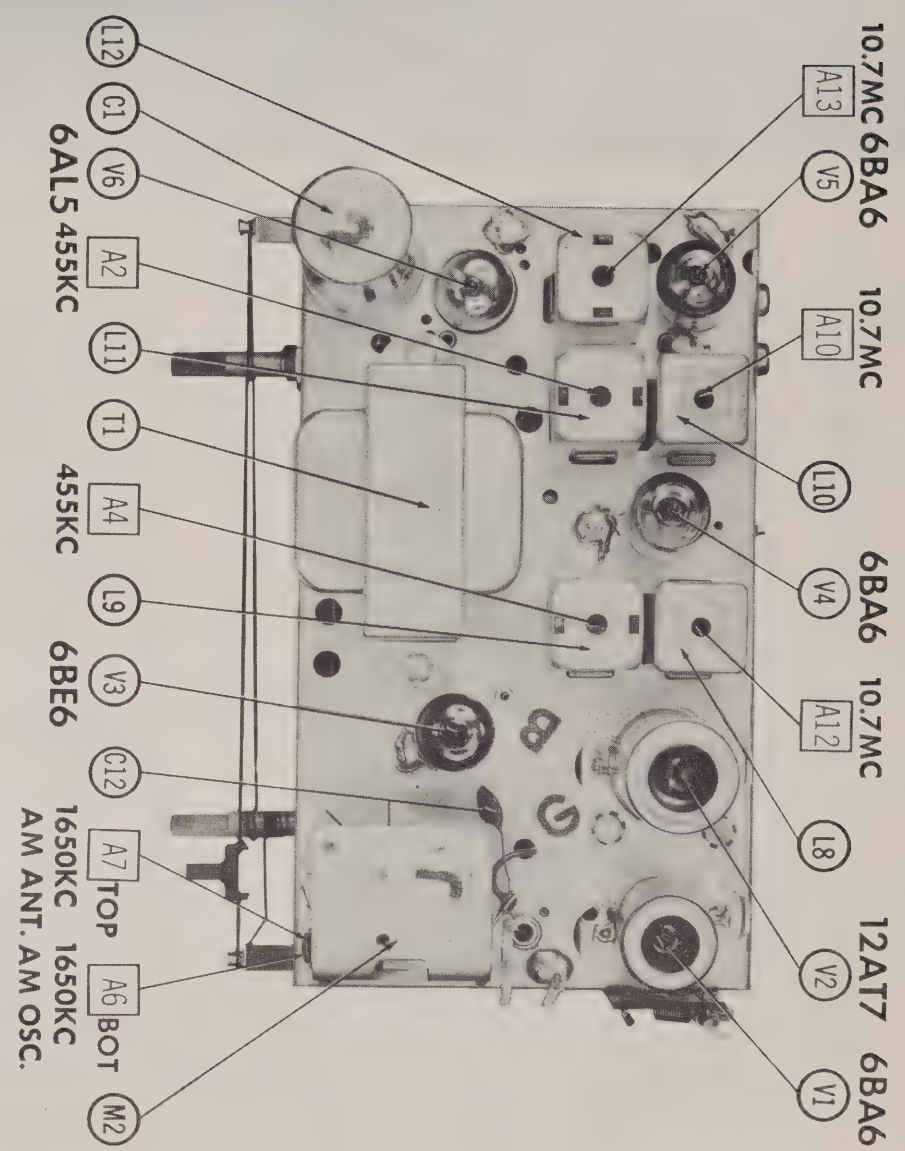
RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	Granco PART No.	NOTES
R1	470K		R-486	
R2	330Ω		R-492	
R3	100Ω		R-653	Note 1
R4	470K		R-486	Note 1
R5	10K		R-490	
R6	2.7meg		R-583	
R7	8200Ω	2	R-651	
R8	22K		R-497	
R9	2.7meg		R-583	
R10	330Ω		R-492	
R11	330Ω		R-492	
R12	100K 5%			Note 1
R13	470K		R-486	
R14	330Ω		R-492	
R15	33K		R-494	Note 2
R16	22K		R-497	
R17	900Ω	7	R-488	

Note 1. Not used in some versions
Note 2. Some versions may use 47K in this application

CHASSIS—TOP VIEW



ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop stick (L6) should be connected for alignment.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	.1mfd	High side to pin 7 (grid) of 6BE6 (V3). Low side to chassis.	455KC (400% Mod.)	AM	Tuning gang fully open	DC probe to point (A). Common to chassis.	A1, A2, A3, A4,	Adjust for maximum deflection
2.		Loop	610KC	AM	Tune to 610KC signal	DC probe to point (A). Common to chassis.	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Rock tuning gang while adjusting.
3.		Loop	1650KC	AM	Tuning gang fully open	DC probe to point (A). Common to chassis.	A6, A7	Adjust for maximum deflection. Repeat steps 1, 2, 3.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100K (±1%) resistors in series from point (B) to chassis. The junction of these two resistors is alignment point (C) as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	.1mfd	High side to pin 7 (grid) of 12AT7 (V2). Low side to chassis.	10.7MC (Unmod)	FM	Point of non-interference	DC probe to point (B). Common to chassis.	A8, A9, A10, A11, A12	Adjust for maximum deflection.
5.	.1mfd	High side to pin 7 (grid) of 12AT7 (V2). Low side to chassis.	10.7MC	FM	Point of non-interference	DC probe to point (A). Common to point (C).	A13	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizonial deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	.1mfd	High side to pin 7 (grid) of 12AT7 (V2) Low side to chassis	10.7MC (450KC Sweep)	FM	Point of non-interference	Vert. Amp. to point (B). Low side to chassis.	A8, A9, A10, A11, A12	Disconnect stabilizing capacitor C2. Adjust for curve of maximum amplitude and symmetry similar to Fig. 1
5.	.1mfd	High side to pin 7 (grid) of 12AT7 (V2) Low side to chassis	10.7MC	FM	Point of non-interference	Vert. Amp. to point (A). Low side to chassis.	A13	Reconnect stabilizing capacitor C2. Adjust so that 10.7MC occurs at center of crossover lines similar to Fig. 2. SLIGHTLY retouch A12 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6.	10mmf	High side to FM Ant terminal. Low side to chassis.	108MC	FM	108MC	DC probe to point (B). Common to chassis.	A14, A15	Adjust for maximum deflection
7.	10mmf	High side to FM Ant. terminal. Low side to chassis.	88MC	FM	88MC	DC probe to point (B). Common to chassis.	L2, L3	Compress or expand coil turns for maximum deflection. Repeat steps 6 and 7 until no further improvement is noted.

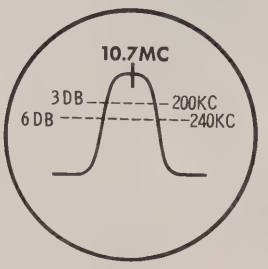


FIG. 1

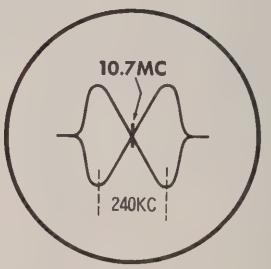
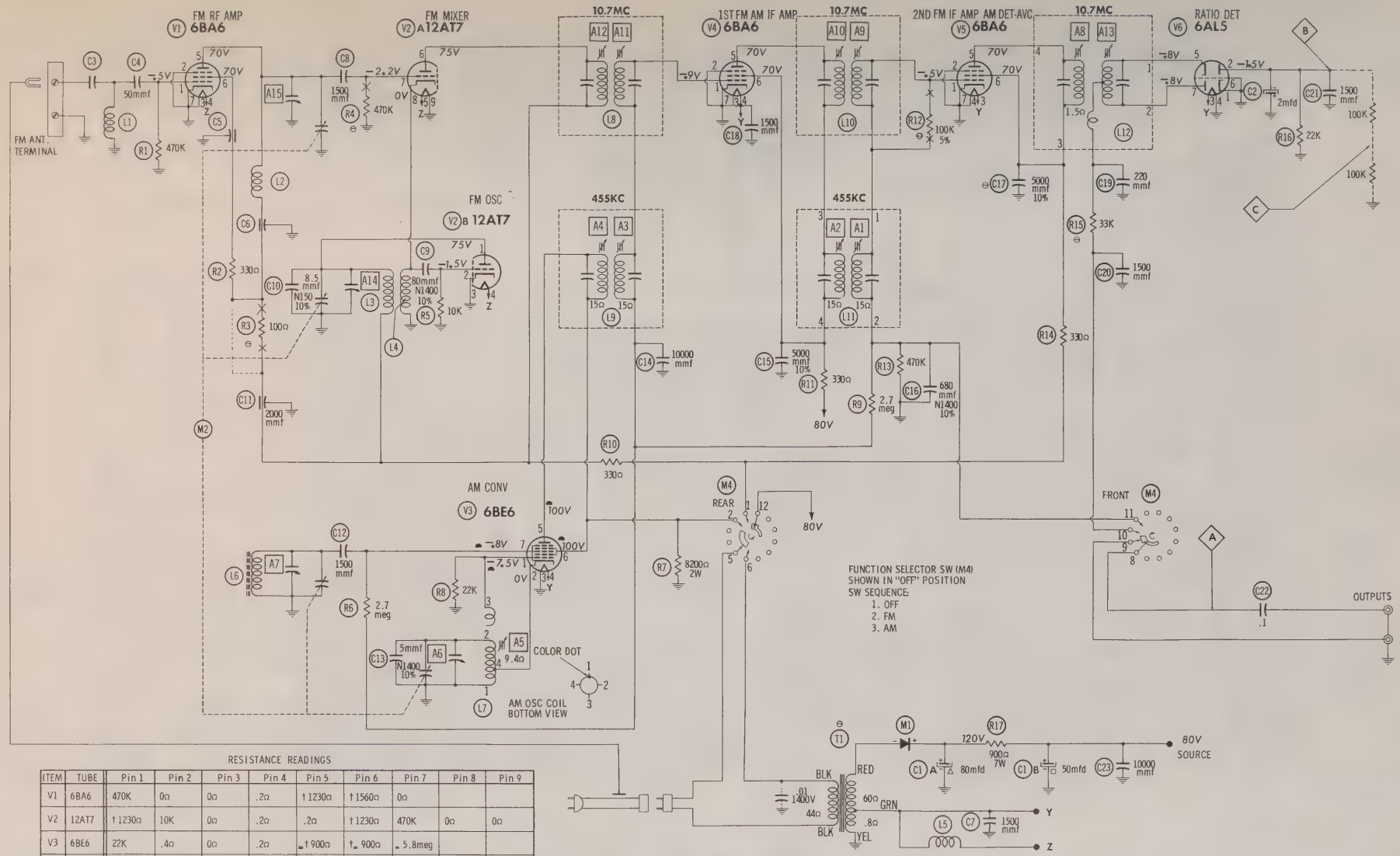


FIG. 2



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BA6	470K	0Ω	0Ω	.2Ω	†1230Ω	†1560Ω	0Ω		
V2	12AT7	†1230Ω	10K	0Ω	.2Ω	.2Ω	†1230Ω	470K	0Ω	0Ω
V3	6BE6	22K	.4Ω	0Ω	.2Ω	▲†900Ω	†▲900Ω	▲5.8meg		
V4	6BA6	3.1meg	0Ω	0Ω	.2Ω	†1245Ω	†1230Ω	0Ω		
V5	6BA6	470K	0Ω	.2Ω	0Ω	†1230Ω	†1230Ω	0Ω		
V6	6AL5	0Ω	22K	.2Ω	0Ω	INF	0Ω	INF		

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED
† MEASURED FROM OUTPUT OF M1
▲ MEASURED IN "AM" POSITION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to commom negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

A PHOTOFACT STANDARD NOTATION SCHEMATIC

Howard W. Sams & Co., Inc. 1958

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	GRANCO PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC ⓐ .28A	120V ⓐ .046A Tap ⓐ 6.3V ⓐ 1.7A			BT-545E ①			PA-8421 ②	26R38 ②	

① Alternate part #T-545
② Drill new mounting hole

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		GRANCO PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	FM Ant. Coil	L-477	19-1000	BC-561	4602	1 Microhenry
L2	FM RF Coil	10-15				
L3	FM Osc. (Pri.)	18-13				
L4	FM Osc. (Sec.)	18-14				
L5	Fil. Choke	18-3	19-1002	BC-563	4606	2.2 Microhenrys
L6	Loop Stick	18-6				
L7	AM Osc. Coil	18-12-1	14-1073	BC-393	69-Osc	
L8	1st FM IF	28-1	16-3487	FM-254	1463	
L9	1st AM IF	L-576	16-6758	BC-352	12-C1	
L10	2nd FM IF	28-2	16-3487	FM-254	1463	
L11	2nd AM IF	L-576	16-6758	BC-353	12-C2	
L12	Ratio Det.	L-473	17-3498	FM-255	1465	

RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	GRANCO PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1	.046A	B-538	1263A	RS065	65	

PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS

ITEM No.	PART NAME	GRANCO PART No.	NOTES
M2	Tuning Cap	46-3	2Gang (Ant. 11-238mmf, Osc. 11-115mmf)
M3	FM Tuning Unit	TU-3	Less Tuning Slugs
	Tuning Slugs	SA-2	FM RF and Oscillator.
M4	Switch	21-3	Function

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	17-7	Function Selector
Knob	17-9	Tuning
Cabinet	13-8	
Dial Scale	12-16	
Dial Pointer	M-470	

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

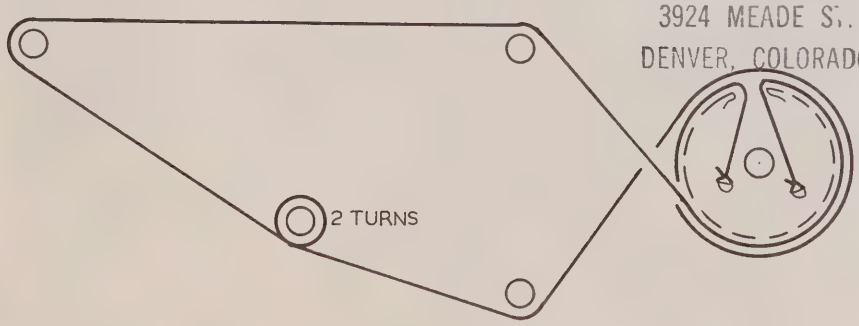
HARMAN-KARDON MODEL T-1040 "Theme II"

HARMAN-KARDON MODEL T-1040 "Theme II"

TRADE NAME	Harman-Kardon Model T-1040 "Theme II"		
MANUFACTURER	Harman-Kardon Inc. 520 Main St., Wesbury, L. I., N. Y.		
TYPE SET	AC Operated FM-AM Tuner		
TUBES	Eleven		
POWER SUPPLY	105-125 Volts AC - 60 Cycles	RATING	.40 Amp. @ 117 Volts AC (39 Watts)
TUNING RANGE - BROADCAST	530 - 1650KC	FREQ. MOD.	88 - 108MC

HARMAN-KARDON MODEL T-1040 "Theme II"

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO



TUNING GANG FULLY CLOSED

DIAL CORD STRINGING

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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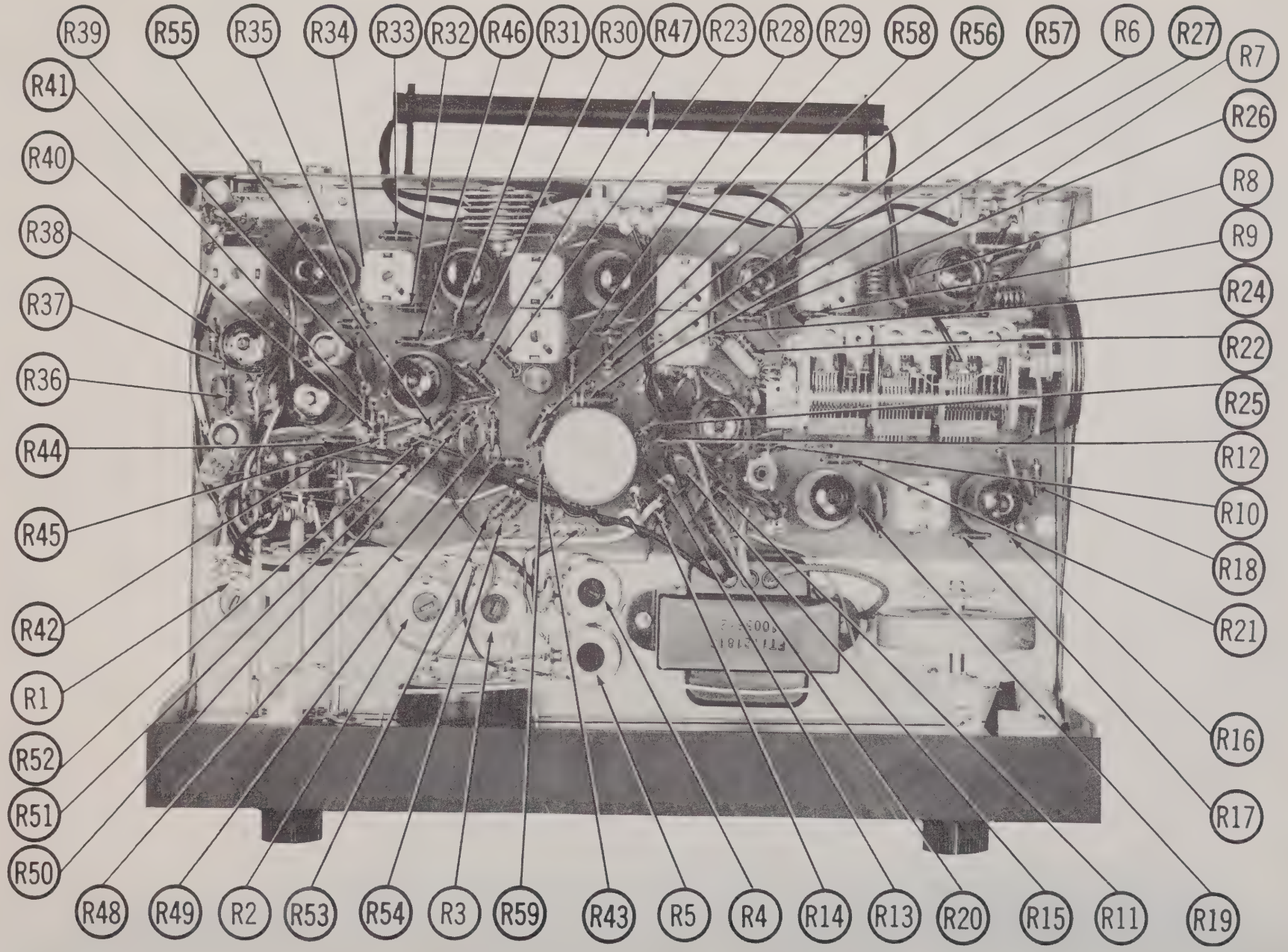
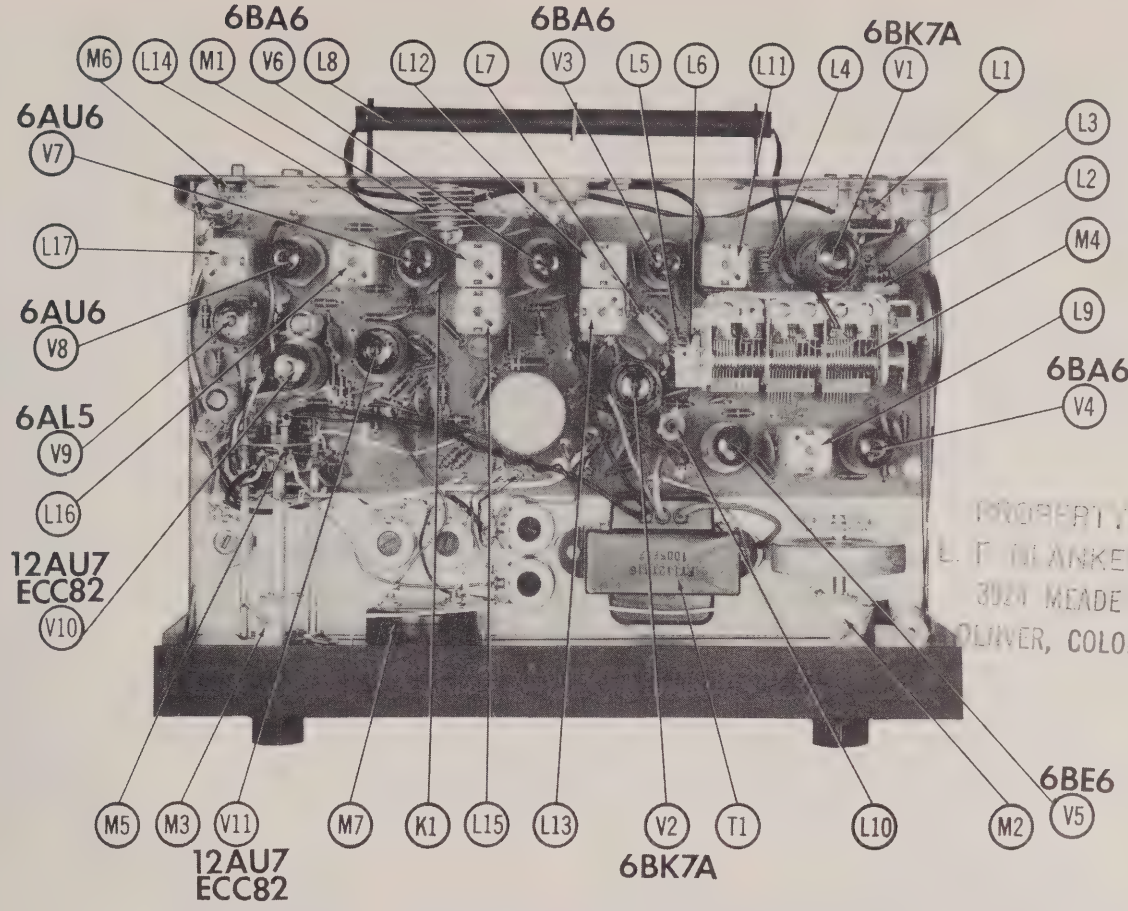
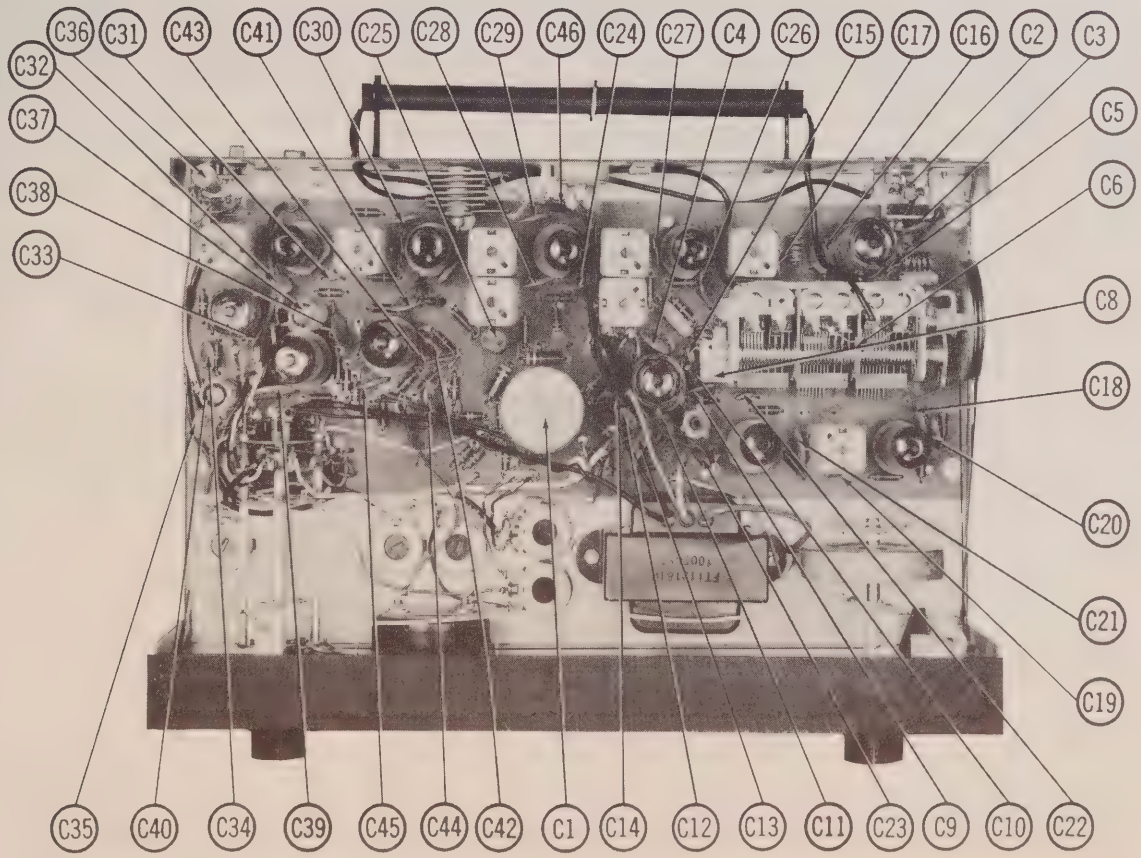


CHASSIS - RESISTOR IDENTIFICATION

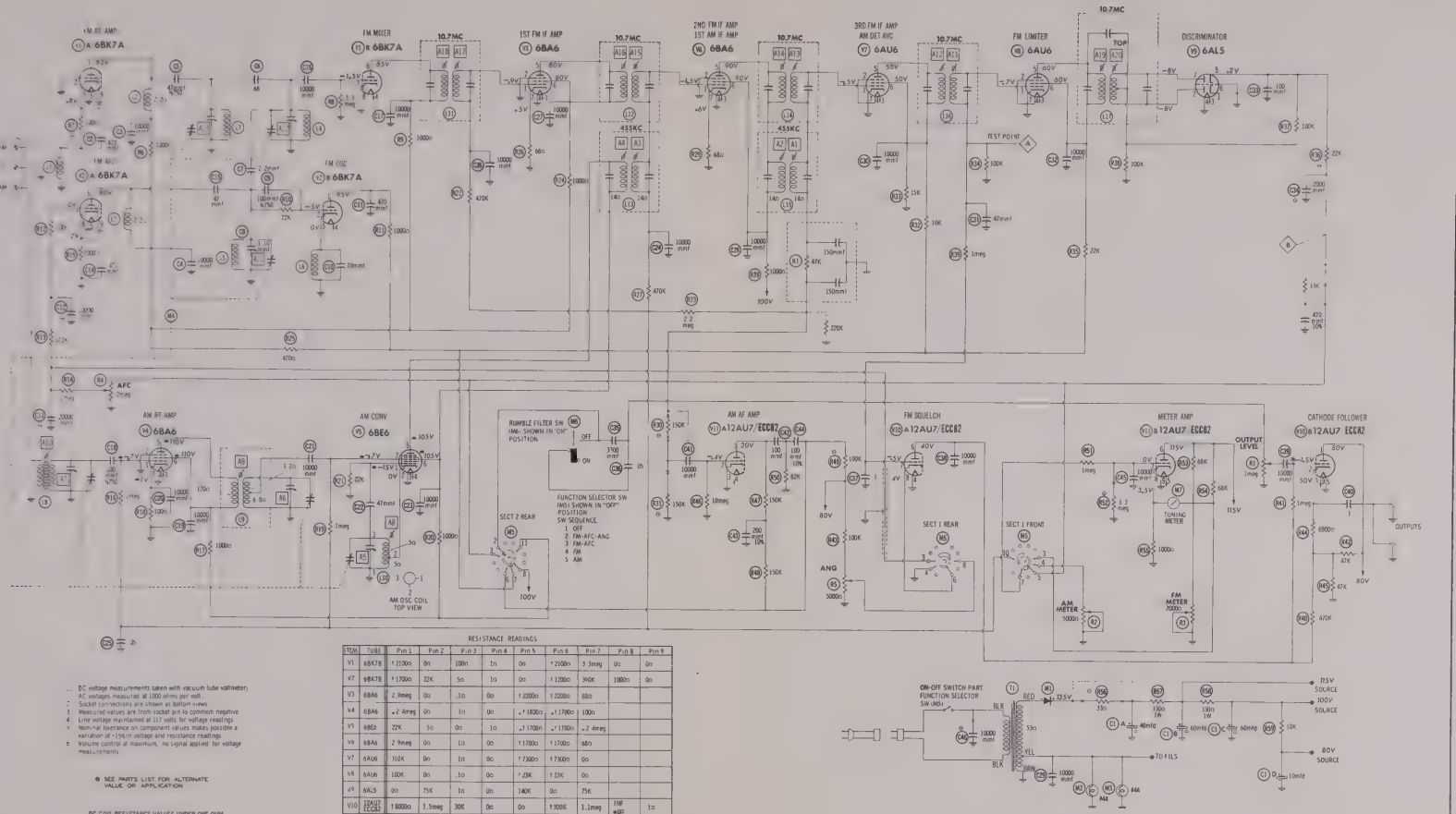


CHASSIS - TUBE & INDUCTOR IDENTIFICATION



CHASSIS - CAPACITOR IDENTIFICATION

PROPERTY OF
L. F. BLANKENSHIP
3020 MEADE ST.
DENVER, COLORADO



RESISTANCE READINGS

TT/M	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BK7B	†2100Ω	0Ω	100Ω	1Ω	0Ω	†2100Ω	3.3meg	0Ω	0Ω
V2	6BK7B	†1700Ω	22K	5Ω	1Ω	0Ω	†1200Ω	390K	1000Ω	0Ω
V3	6BA6	2.9meg	0Ω	.1Ω	0Ω	†2200Ω	†2200Ω	68Ω		
V4	6BA6	≠2.4meg	0Ω	1Ω	0Ω	≠†1800Ω	≠†1700Ω	100Ω		
V5	6BE6	22K	5Ω	0Ω	1Ω	≠†1700Ω	≠†1700Ω	≠2.4meg		
V6	6BA6	2.9meg	0Ω	1Ω	0Ω	†1700Ω	†1700Ω	68Ω		
V7	6AU6	310K	0Ω	1Ω	0Ω	†7300Ω	†7300Ω	0Ω		
V8	6AU6	100K	0Ω	.1Ω	0Ω	†23K	†23K	0Ω		
V9	6AL5	0Ω	75K	1Ω	0Ω	140K	0Ω	75K		
V10	12AU7 ECC82	†8000Ω	1.5meg	30K	0Ω	0Ω	†500K	1.1meg	INF mΩ	1Ω
V11	12AU7 ECC82	†370K	10meg	0Ω	.1Ω	.1Ω	†368Ω	800K 1.4meg	600Ω	0Ω

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED
† MEASURED FROM OUTPUT OF M1
≠ MEASURED IN "AM" POSITION
* MEASURED IN "FM-AFC-ANG" POSITION
^ MEASURED FROM PIN 3 OF V10

DC voltage measurements taken with vacuum tube voltmeter.
AC voltages measured at 1000 ohms per volt.
Socket connections are shown as bottom views.
3 Measured values are from socket pin to common negative
4 Line voltage maintained at 117 volts for voltage readings
5 Nominal tolerance on component values makes possible a variation of ±5% in voltage and resistance readings.
6 Volume control at maximum, no signal applied for voltage measurements.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co. Inc. 1958

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ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.
Use an insulated alignment screwdriver for adjusting.
To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	.01mfd	High side to AM RF stator lug on tuning gang. Low side to chassis.	455KC (400~ Mod.)	AM	1600KC	AC VTVM across output	A1, A2, A3, A4	Adjust for maximum deflection.
2.	"	High side to AM Ant. Term. Low side to chassis.	1400KC	"	1400KC	"	A5, A6, A7	"
3.	"	"	600KC	"	600KC	"	A8, A9, A10	Adjust for maximum deflection. Repeat steps 2 & 3.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	.01mfd	High side to FM RF stator lug on tuning gang. Low side to chassis.	10.7MC (Unmod.)	FM (AFC off)	Point of non-interference	DC probe to point (A). Common to chassis.	A11, A12, A13, A14, A15, A16, A17, A18	Adjust for maximum deflection.
5.	"	"	"	"	"	DC probe to point (B). Common to chassis.	A19, A20	Detune A20. Adjust A19 for maximum deflection. Adjust A20 for zero reading with equal positive and negative deflection on either side of correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	.01mfd	High side to FM RF stator lug on tuning gang. Low side to chassis.	10.7MC (450KC Swp.)	FM (AFC off)	Point of non-interference	Vert amplifier thru 1meg to point (A). Low side to chassis	A11, A12, A13, A14, A15, A16, A17, A18	Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
5.	"	"	"	"	"	Vert amplifier thru 1meg to point (B). Low side to chassis.	A19, A20	Adjust A20 so that 10.7MC occurs at center of crossover lines similar to Fig. 2. Adjust A19 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6.	270Ω Carbon Resistor	High side thru 270Ω to FM Antenna Terminal. Low side to chassis.	106MC	FM (AFC off)	106MC	DC probe to point (A). Common to chassis.	A21, A22, A23	Adjust for maximum deflection.
7.	"	"	90MC	"	90MC	"	L3, L4, L5	Adjust for maximum deflection by expanding or compressing coil turns. Repeat steps 6 & 7.

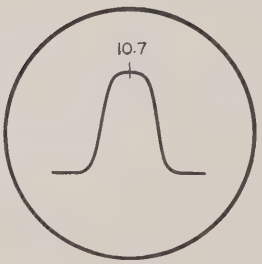


FIG. 1

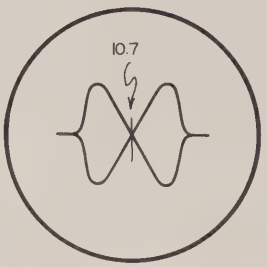


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE
V1	FM RF Amp. - FM Mixer	6BK7A
V2	FM Osc. - FM AFC	6BK7A
V3	1st FM IF Amplifier	6BA6
V4	AM RF Amplifier	6BA6
V5	AM Converter	6BE6
V6	2nd FM-1st AM IF Amplifier	6BA6

ITEM No.	USE	TYPE
V7	3rd FM IF Amp. - AM Det. -AVC	6AU6
V8	FM Limiter	6AU6
V9	Discriminator	6AL5
V10	FM Squelch- AF Cathode Follower	12AU7/ECC82
V11	AM AF Amp. - Meter Amp.	12AU7/ECC82

ELECTROLYTIC CAPACITOR

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA Harman-Kardon PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲40	150							R2440 *
B	▲60	150							
C	■60	150							
D	10	150							

* Non Catalog Item

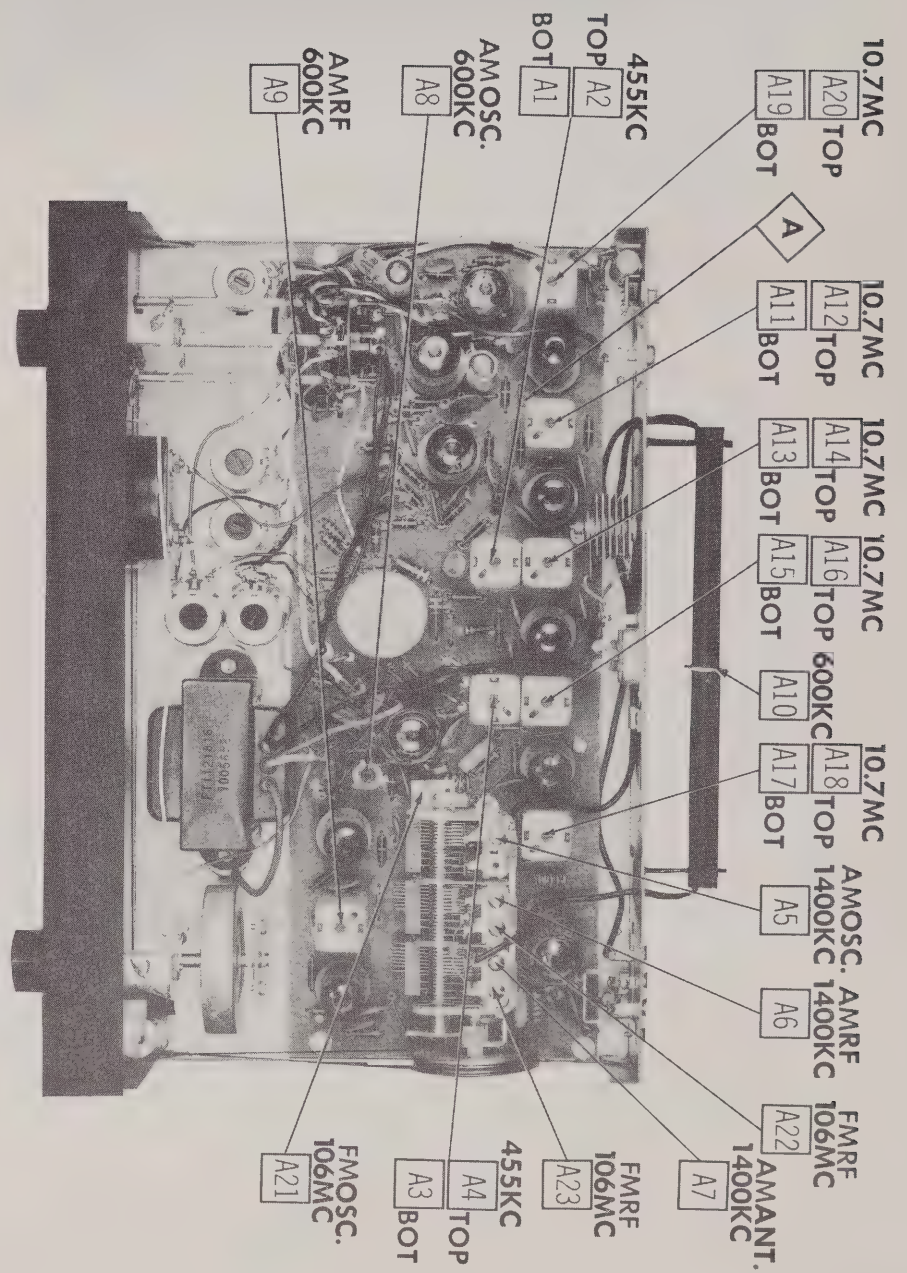
FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA Harman-Kardon PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	470			SI 470	D6-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C3	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C4	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C5	47			N750-SI 47	TCN-47	C10Q47U	TC7-47	NT-5447	5TCU-Q47	N750
C6	.68				TCZ-R68		TCO-.68			
C7	2.2			NPO-SI 2.2	TCZ-2R2	C10V22C	TCO-2.2		5TCCB-V22	
C8	1-10		JV20688							
C9	100			N750-SI 100	TCH-100	C10T1U	TC7-100	NT-531	5TCU-T1	
C10	10			SI 10	D6-100	LT6Q1	GP-10	UC-541	5GA-Q1	
C11	470			BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C12	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	①
C13	20000			BPD-02	DD-203	BYB6S2	ED-02		5HK-S2	②
C14	470			BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C15	47			BPD-000047	DD-470	L10Q47	ED-47	UC-5447	5GA-Q47	
C16	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C17	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C18	100			N750-SI 100	TCN-100	C10T1U	TC7-100	NT-531	5TCU-T1	N750
C19	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C20	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C21	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C22	47			BPD-000047	DD-470	L10Q47	ED-47	UC-5447	5GA-Q47	
C23	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C24	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C25	.05	200				BC6S47J		ACE615	2SE-S10	
C26	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C27	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C28	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C29	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C30	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C31	47			BPD-000047	DD-470	L10Q47	ED-47	UC-5447	5GA-Q47	
C32	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C33	100			BPD-0001	DD-101	L10T1	ED-100	UC531	5GA-T1	
C34	2000			BPD-002	DD-202	BYA10D2	ED-002	DC522	5HK-D2	①
C35	3300			BPD-0033	D6-332	BYA10D33	ED-0033	UC-5233	5GA-D33	
C36	.05	200		P288N-05	DF-503	CUB2S5		GEM-215	2TM-S5	
C37	.1	200				BC2P1J		ACE401	2SE-P10	
C38	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C39	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C40	.1	200				BC2P1J		ACE401	2SE-P10	
C41	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C42	100			BPD-0001	DD-101	L10T1	ED-100	UC531	5GA-T1	
C43	200				D6-201	L10T2	ED-200			10%
C44	100				DD-101	L10T1	ED-100			10%
C45	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C46	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	③

① Some versions use 470mmf in this application.
② Some versions use 10000mmf in this application.
③ Not used in some versions.

CHASSIS– ALIGN. IDENTIFICATION



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Harman-Kardon PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1meg	½	RV1121909	AB-70 ①	A47-1meg-Z①	B11-137	TA16A	Output Level
B	Shaft			AK-1	FKS-1/4	TM1-Kit	Not Req.	
R2A	5000Ω	½	RV1121820	AB-10 ①	A47-5000-S①	B11-114	TA53L	AM Meter
B	Shaft			AK-1	FKS-1/4	TM1-Kit	Not Req.	
R3A	2000Ω	½	RV1121821	AB-6 ①	A47-2000-S①	B11-110	SU-8	FM Meter
B	Shaft			AK-1	FKS-1/4	TM1-Kit	Not Req.	
R4A	2meg	½	RV1121819	AB-75 ①	A47-2meg-S①	B11-139	PTA26L	AFC
B	Shaft			AK-1	FKS-1/4	TM1-Kit	Not Req.	
R5A	5000Ω	½	RV1121910	AB-10 ①	A47-5000-S①	B11-114	TA53L	ANG
B	Shaft			AK-1	FKS-1/4	TM1-Kit	Not Req.	

① Enlarge mounting hole.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		Harman-Kardon PART No.	NOTES
	OHMS	WATT		
R6	1000Ω			
R7	100Ω			Note 1
R8	3.3meg			
R9	1000Ω			
R10	22K			
R11	1000Ω			
R12	100Ω			
R13	470K			
R14	1meg			
R15	1000Ω			
R16	1meg			
R17	1000Ω			
R18	100Ω			
R19	1meg			
R20	1000Ω			
R21	22K			
R22	470K			
R23	2.2meg			
R24	1000Ω			
R25	470Ω			
R26	68Ω			
R27	470K			
R28	1000Ω			
R29	68Ω			
R30	150K			Note 2
R31	150K			Note 2
R32	10K			

ITEM No.	RATING		Harman-Kardon PART No.	NOTES
	OHMS	WATT		
R33	15K			
R34	100K			
R35	22K			
R36	22K			Note 3
R37	100K			
R38	100K			
R39	1meg			
R40	470K			
R41	1meg			
R42	47K			
R43	100K			
R44	6800Ω			
R45	47K			
R46	10meg			
R47	150K			
R48	150K			
R49	100K			Note 4
R50	82K			
R51	1meg			
R52	3.3meg			Note 2
R53	68K			
R54	68K			
R55	1000Ω			
R56	33Ω			Note 2
R57	330Ω	1		
R58	330Ω	1		
R59	10K			

Note 1. Some versions may use 68Ω in this application.
Note 2. Not used in some versions.
Note 3. Some versions may use 33K in this application.
Note 4. Some versions may use 47K in this application.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	Harman-Kardon PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .4A	120V @ .056A Tap @ 6.3V @ 4A			FT1121816					

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		Harman-Kardon PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	FM Ant. Coil				4584	.24 Microhenry; IRC Part #CLA
L2	RF Choke					3.3 Microhenries; IRC Part #CLA
L3	FM RF Coil	GL781543				
L4	FM Mixer Coil	GL781543				
L5	FM Osc. Coil	GL1122007				
L6	Cathode Choke		19-1000	BC-561	4602	1 Microhenry; IRC Part #CLA
L7	RF Choke					3.3 Microhenry; IRC Part #CLA
L8	Loop Stick	GL1121822				
L9	AM RF Trans.	GT1121845				
L10	AM Osc. Coil	GL1121988				
L11	1st FM IF	GT1292108A	16-3490		1463-PC	
L12	2nd FM IF	GT1292109	16-3490		1463-PC	
L13	1st AM IF	GT782122A	16-6780	BC-356	13-PC1	
L14	3rd FM IF	GT1292110A	16-3490		1463-PC	
L15	2nd AM IF	GT782122A	16-6780	BC-357	13-PC2	
L16	FM Limiter	GT1292111	16-3490		1463-PC	
L17	FM Discr.	GT1292112	17-3491		1464-PC	

COMPONENT COMBINATION

ITEM No.	USE	DESCRIPTION	Harman-Kardon PART No.	REPLACEMENT DATA
K1	Diode RF Filter	150mmf, 150mmf, 47K	PC781599	Aerovox PA-98 Centralab PC-51 Cornell-Dubilier 111TM2 Erie 1403-02 Sprague D-2

RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	Harman-Kardon PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1	.056A	Z1121908	1003A	RS075	75	

MISCELLANEOUS

ITEM No.	PART NAME	Harman-Kardon PART No.	NOTES
M2	Pilot Lamp		#44
M3	Pilot Lamp		#44
M4	Tuning Cap.	JV1121844	6 Gang
M5	Switch	ER1121843	Function (Rotary Wafer Type)
M6	Switch		Rumble Filter (Slide Type SPST)
M7	Meter	Z1041686	Tuning

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	P20778	Tuning & Selector
Dial Glass	P1121824	
Dial Pointer	P1121825	

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)..... Use BELDEN No. 8401
Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)

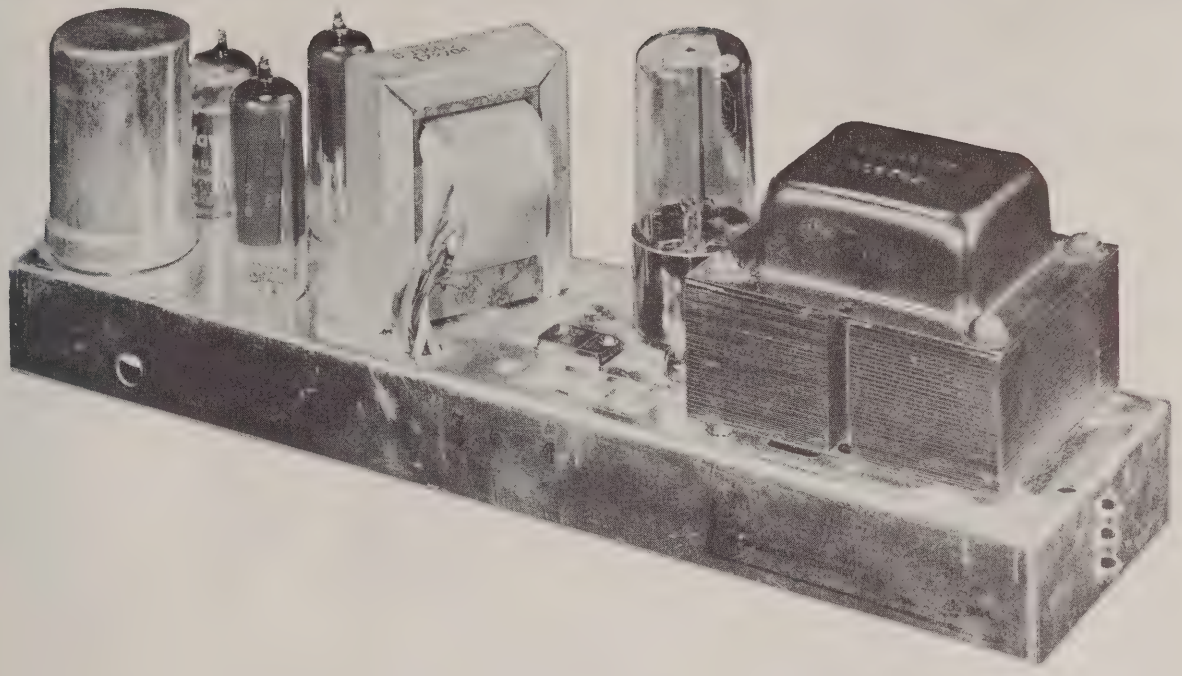
PHOTOFACT* Folder

*TRADE MARK

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

MAGNAVOX CHASSIS AMP-163AA

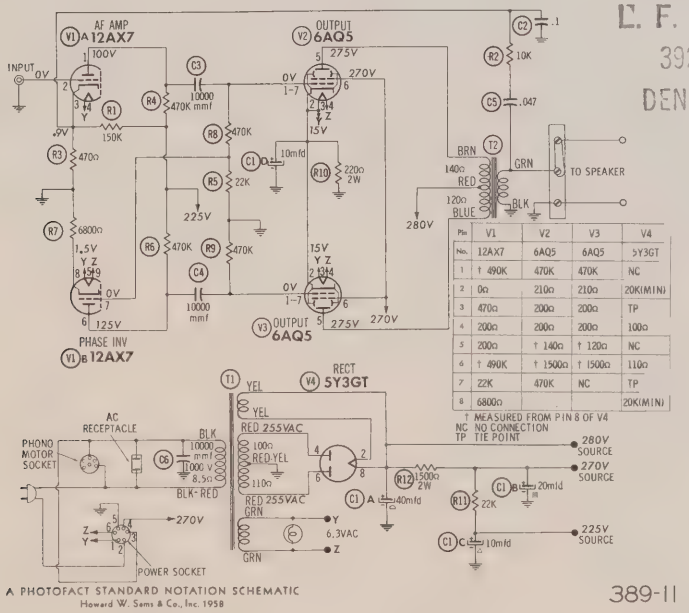
MAGNAVOX CHASSIS AMP-163AA



TRADE NAME	Magnavox Chassis AMP-163AA
MANUFACTURER	Magnavox Co., 2131 Bueter Rd., Fort Wayne 4, Indiana
TYPE SET	AC Operated Audio Amplifier
TUBES (Four)	Types 12AX7 AF Amp. - Phase Inv., (2) 6AQ5 Output, 5Y3GT Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING .45 Amp. @ 117 Volts AC (49 Watts)

MAGNAVOX CHASSIS AMP-163AA

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO



Pin No.	V1	V2	V3	V4
1	↑ 490K	470K	470K	NC
2	0Ω	210Ω	210Ω	20K(MIN)
3	470Ω	200Ω	200Ω	TP
4	200Ω	200Ω	200Ω	100Ω
5	200Ω	↑ 140Ω	↑ 120Ω	NC
6	↑ 490K	↑ 1500Ω	↑ 1500Ω	110Ω
7	22K	470K	NC	TP
8	6800Ω			20K(MIN)

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

389-11

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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FOLDER 11

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	AF Amp. -Phase Inverter	12AX7	
V2	Output	6AQ5	
V3	Output	6AQ5	
V4	Rectifier	5Y3GT	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	MAGNAVOX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▰ 40	300	270021-61	AFH4-01-80	DO016	FP376.6 TC78	TMQ-2	Q-200 MT-4540	TVL-4578
B	■ 20	300							
C	▲ 10	300							
D	10	25							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	MAGNAVOX PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	.1	200	250202-13	P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C3	10000		250218-19	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C4	10000		250218-19	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C5	.047	200	250202-11	BPD-05	DF-503	CUB2S47		GEM-2147	2TM-P47	
C6	10000	1000	250219-2			BYA6S1				

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	MAGNAVOX PART No.	NOTES
R1	150K		230104-88	
R2	10K		230104-74	
R3	470Ω		230104-58	
R4	470K		230104-94	
R5	22K		230104-78	
R6	470K		230104-94	
R7	6800Ω		230104-72	
R8	470K		230104-94	
R9	470K		230104-94	
R10	220Ω	2	230096-54	
R11	22K		230104-78	
R12	1500Ω	2	230106-64	

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	MAGNAVOX PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC @.45A	525VCT @.070A	5VAC @2A	6.3VAC @1.2A	300095-1	P9205 ①	P-3051	PM-8403①		R-8B ①

① Tape center tap on 6.3V winding.

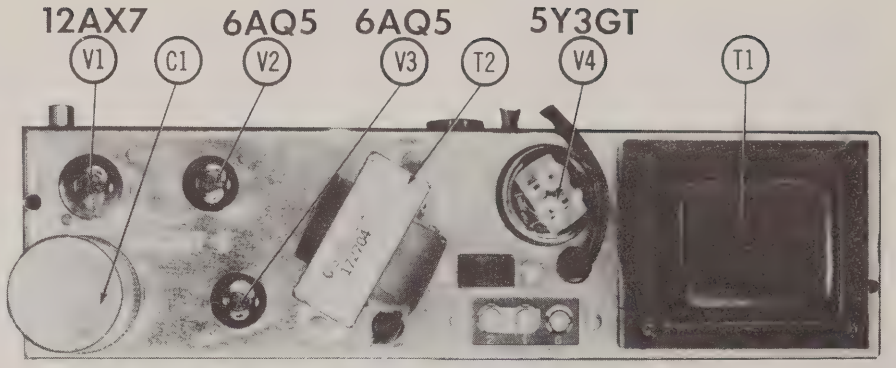
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	MAGNAVOX PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	6500Ω CT	3.2Ω	330039-1	Z1007	A-2901	A-3823	24S61	S-53X	

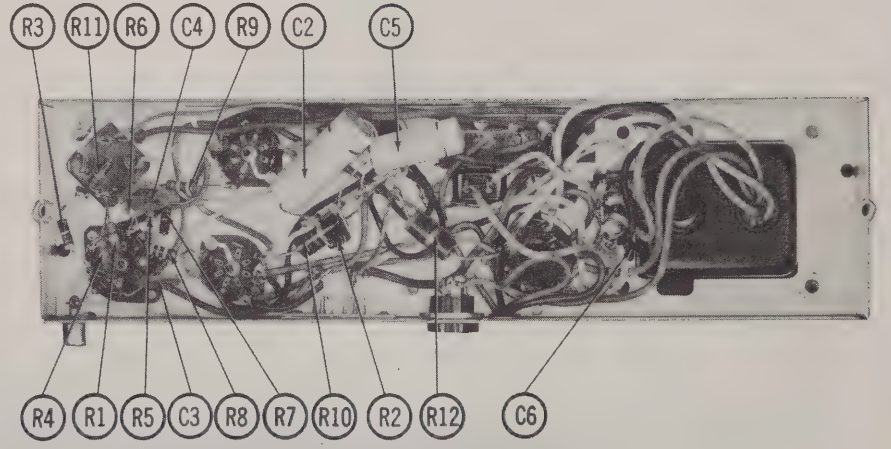
WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

CHASSIS—TOP VIEW



CHASSIS—BOTTOM VIEW



PHOTOFACT* Folder

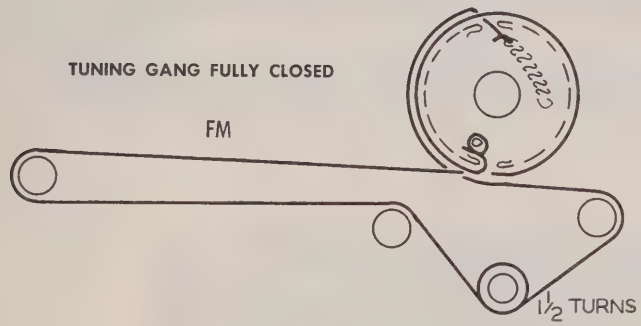
OLYMPIC-OPTA MODELS "Cremona" 5804T/W, "Cremona" 5805T/W, "Magnet" 5735W

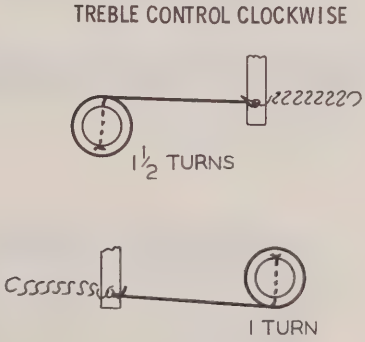
OLYMPIC-OPTA MODELS "Cremona" 5804T/W, "Cremona" 5805T/W, "Magnet" 5735W

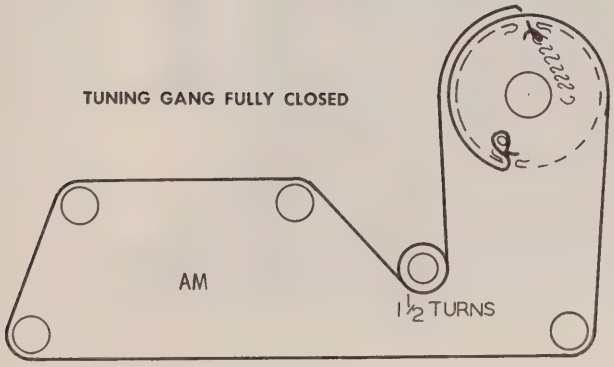
PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

OLYMPIC-OPTA MODELS "Cremona" 5804T/W, "Cremona" 5805T/W, "Magnet" 5735W

TRADE NAME	Olympic-Opta Models "Cremona" 5804 T/W, "Cremona" 5805 T/W, "Magnet" 5735W		
MANUFACTURER	Olympic Radio & Tel. Corp., 34-01 38th Ave., Long Island City 1, N. Y.		
TYPE SET	AC Operated FM-BC-SW Receiver		
TUBES (Six)	Types 6AQ8/ECC85 FM RF Amp. -FM Conv., 6AJ8/ECH81 1st FM IF Amp. -AM Mixer-AM Osc., EF89 2nd FM IF Amp. -AM IF Amp., 6T8/EABC80 Ratio Det. -AM Det. -AVC-AF Amp., 6BR5/EM80 Tuning Indicator, 6BQ5/EL84 Output		
POWER SUPPLY	110-120 Volts AC-60 Cycles	RATING	.48 Amp. @ 117 Volts AC (50 Watts)
TUNING RANGE	BROADCAST 535-1620KC SHORT WAVE 6-15MC	FREQ. MOD.	88-108MC



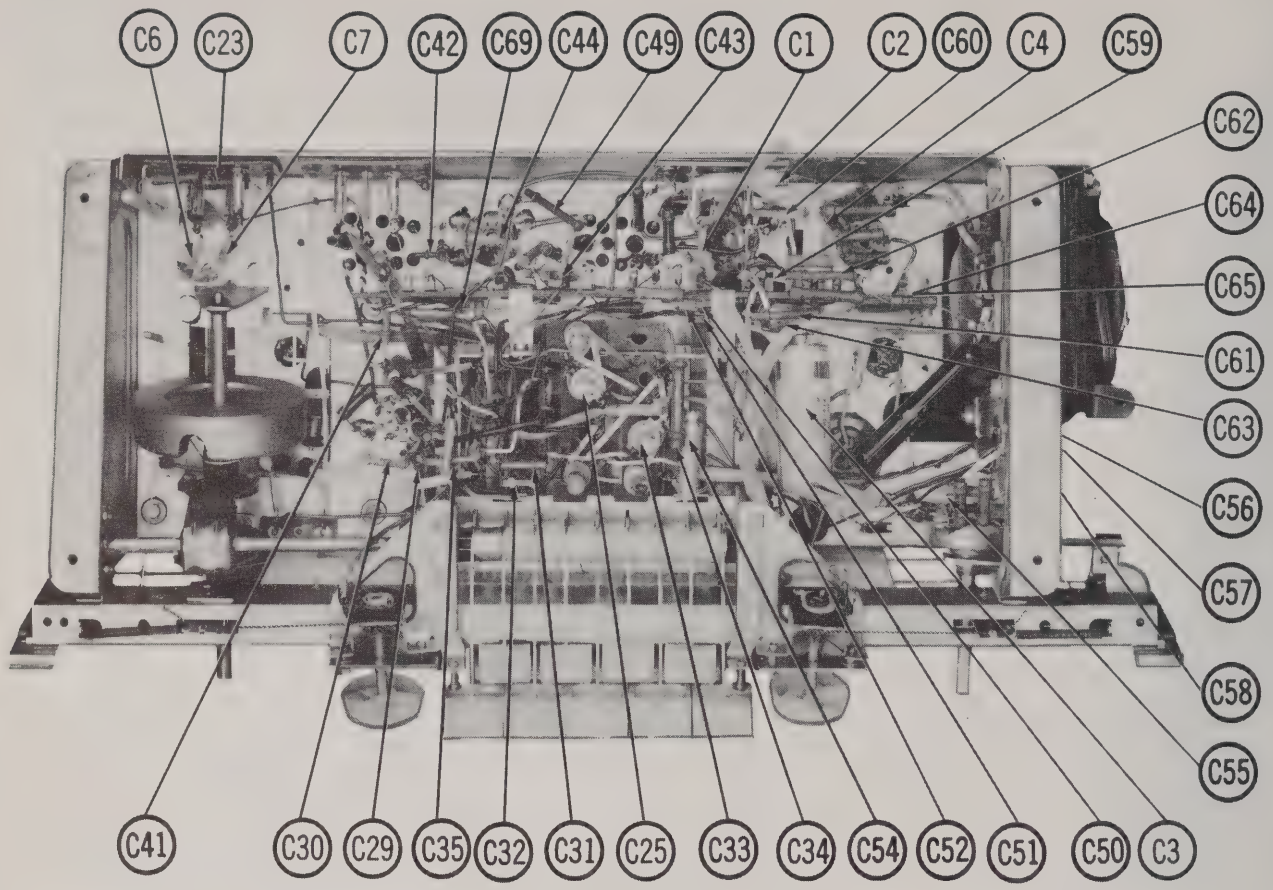




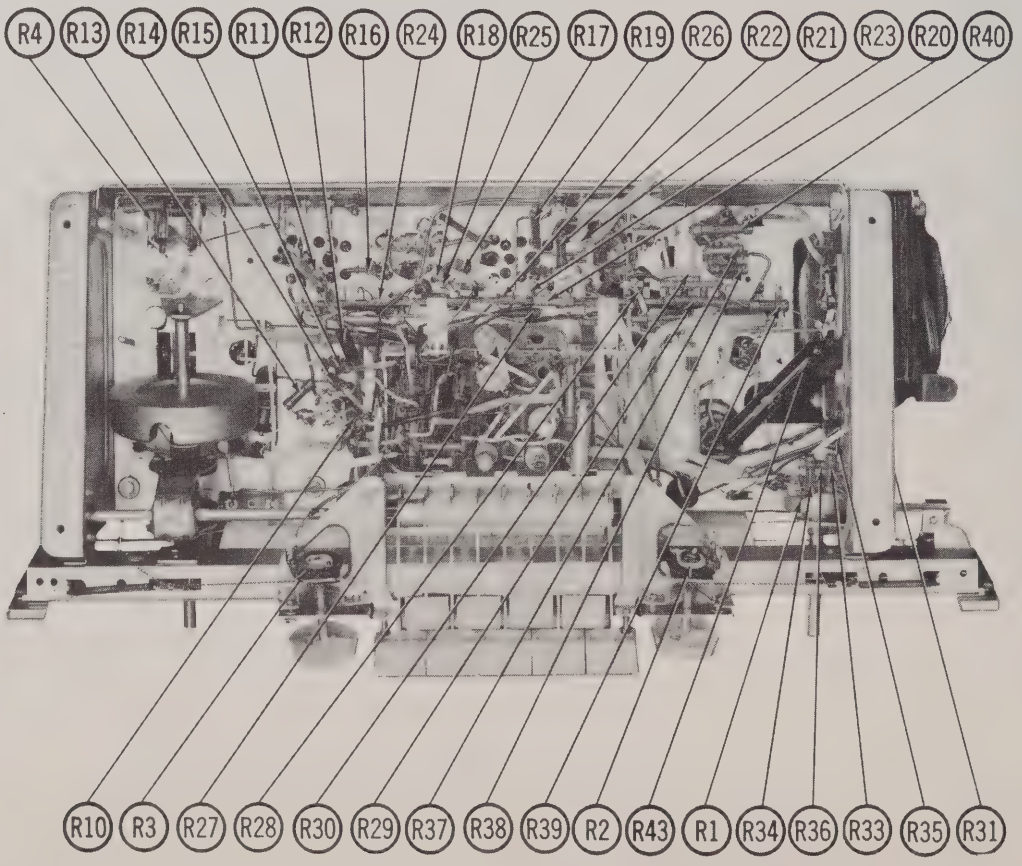
DIAL CORD STRINGING

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

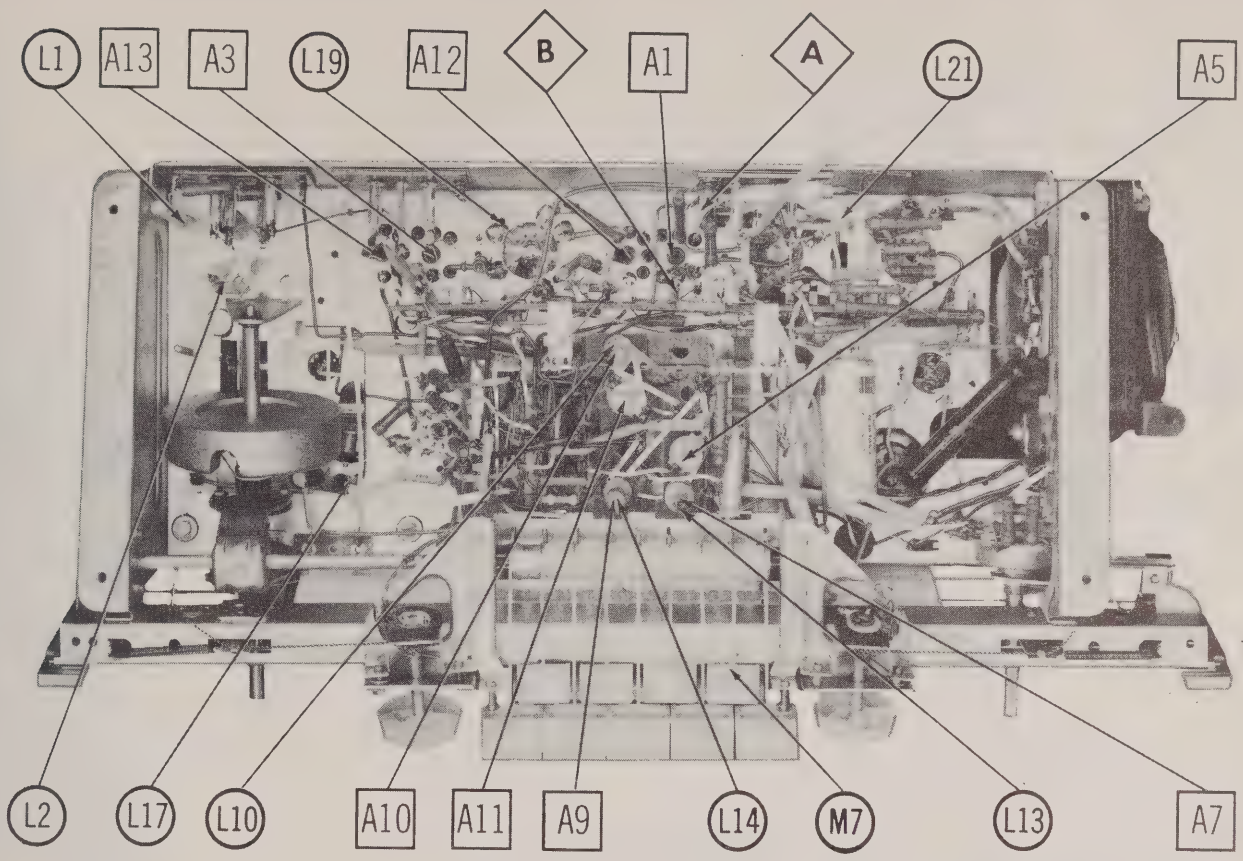
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1958 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

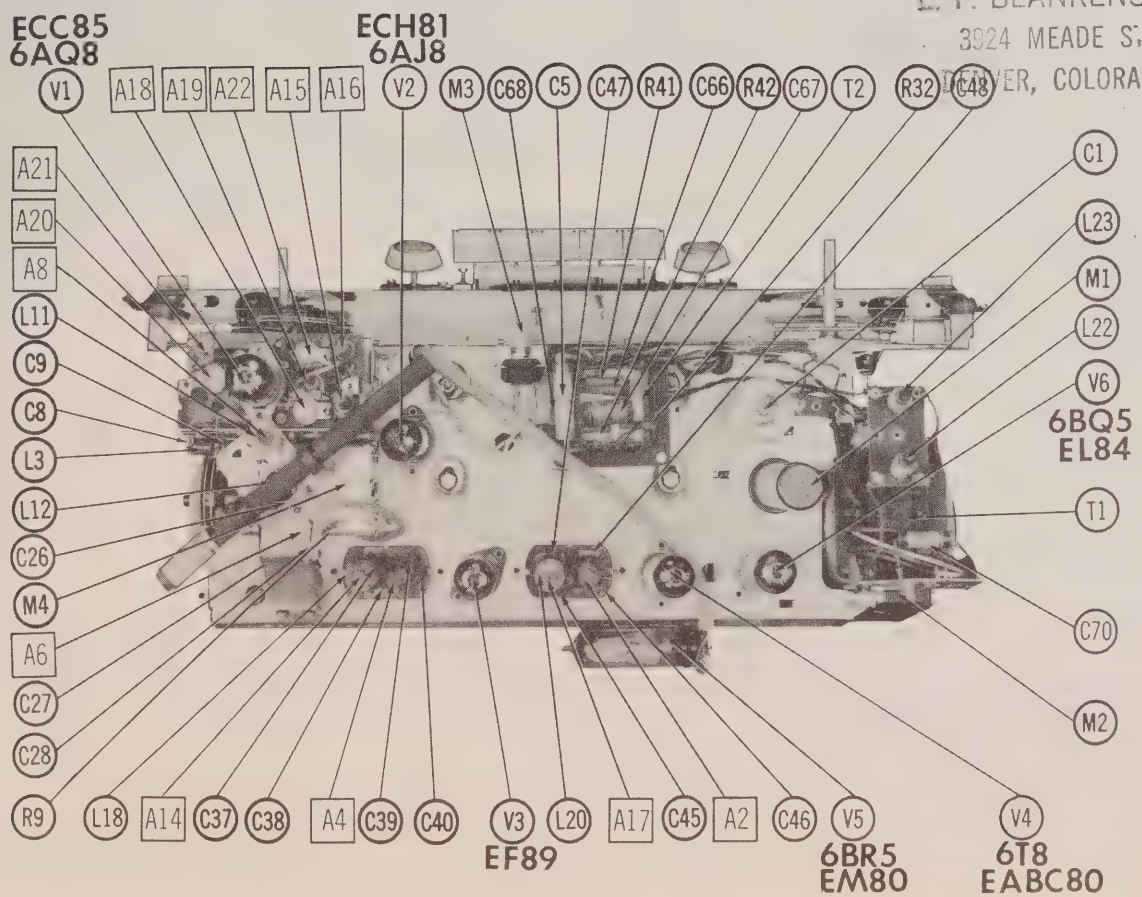


CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

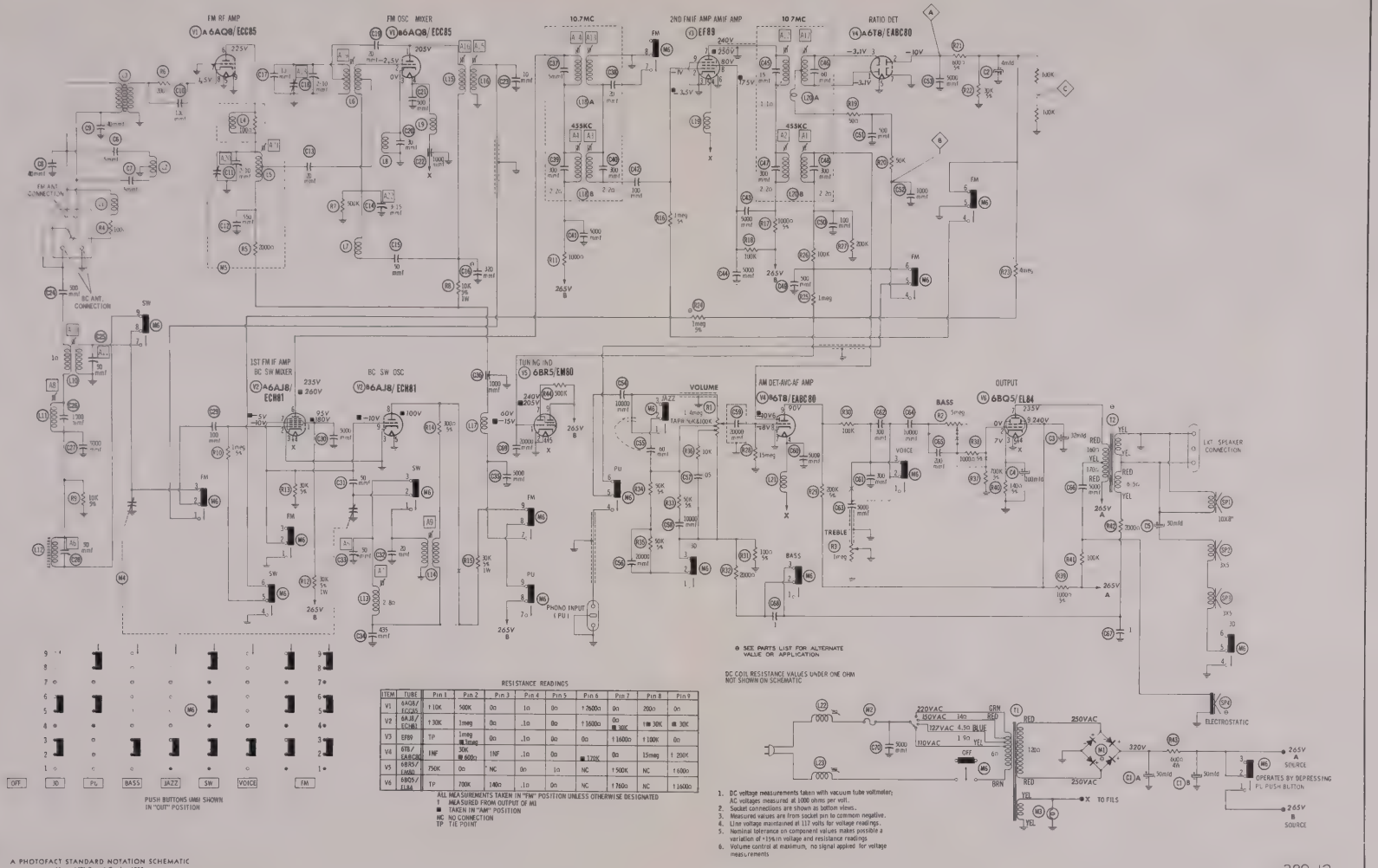


CHASSIS BOTTOM VIEW ALIGNMENT IDENTIFICATION

PROPERTY OF
D. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO



CHASSIS TOP VIEW



⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6AQ8/ ECC85	↑10K	500K	0Ω	1Ω	0Ω	↑260Ω	0Ω	200Ω	0Ω
V2	6AJ8/ ECH81	↑30K	1meg	0Ω	.1Ω	8Ω	↑160Ω	0Ω ■ 30K	■ 30K	■ 30K
V3	EF89	TP	1meg ■ 1meg	0Ω	.1Ω	0Ω	0Ω	↑160Ω	↑100K	0Ω
V4	6T8/ EABC80	INF	30K ■ 600Ω	INF	.1Ω	0Ω	■ 370Ω	0Ω	15meg	↑ 200K
V5	6BR5/ EM80	750K	0Ω	NC	0Ω	1Ω	NC	↑500K	NC	↑600Ω
V6	6BQ5/ EL84	TP	700K	140Ω	.1Ω	0Ω	NC	↑760Ω	NC	↑1600Ω

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED
↑ MEASURED FROM OUTPUT OF M1
■ TAKEN IN "AM" POSITION
NC NO CONNECTION
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

389-12

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01mfd	High side to pin 2 (grid) of ECH81 (V2). Low side to chassis.	455KC (400∿ Mod)	BC	Tuning gang fully open	Across voice coil	A1, A2 A3, A4	Adjust for maximum output.
2.		Loop	1500KC	"	1500KC	"	A5, A6	"
3.		"	550KC	"	550KC	"	A7	"
4.	.01mfd	Across short wave antenna terminals	455KC	"	Point of non-interference	"	A8	Adjust for MINIMUM output.
5.	200mmf	"	6MC	SW	6MC	"	A9, A10	Adjust for maximum output.
6.	"	"	15MC	SW	15MC	"	A11	"

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100K (±1%) resistors in series from point Ⓐ to chassis. The junction of these two resistors is alignment point Ⓒ as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	200mmf	High side to pin 2 (grid) of 6AQ8/ECC85 (V1). Low side to chassis.	10.7MC (Unmod.)	FM	Point of non-interference	DC probe to point Ⓐ. Common to chassis.	A12, A13 A14, A15 A16	Disconnect stabilizing capacitor C2. Adjust for maximum deflection.
8.	"	"	"	"	"	DC probe to point Ⓑ. Common to point Ⓒ.	A17	Reconnect capacitor C2. Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sowtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
7.	200mmf	High side to pin 2 (grid) of 6AQ8/ECC85 (V1). Low side to chassis.	10.7MC (450KC Swp)	FM	Point of non-interference	Vert. Amp. to point Ⓐ. Low side to chassis	A12, A13 A14, A15 A16	Disconnect stabilizing capacitor C2. Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
8.	"	"	"	"	"	Vert. Amp. to point Ⓑ. Low side to chassis.	A17	Reconnect stabilizing capacitor C2. Adjust so that 10.7MC occurs at center of crossover lines similar to Fig. 2. SLIGHTLY retouch A12 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
9.	270Ω Carbon Resistor	Across FM antenna terminals	105MC	FM	105MC	DC probe to point Ⓐ. Common to chassis.	A18	Adjust for maximum deflection.
10.	"	"	89.5MC	"	89.5MC	"	A19	"
11.	"	"	105MC	"	105MC	"	A20	"
12.	"	"	89.5MC	"	89.5MC	"	A21	Adjust for maximum deflection. Repeat steps 9, 10, 11, 12 until no further improvement is noted.
13.	"	"	105MC	"	105MC	"	A22	Adjust for MINIMUM deflection.

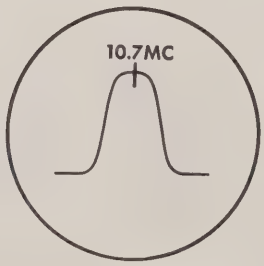


FIG. 1

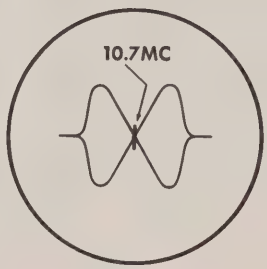


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE
V1	FM RF Amp. - FM Conv.	6AQ8/ECC85
V2	1st FM IF Amp. -AM Mixer-AM Oscillator	6AJ8/ECH81
V3	2nd FM IF Amp. - AM IF Amp.	EF89
V4	Ratio Det. - AM Det. - AVC-AF Amplifier	6T8/EABC80
V5	Tuning Indicator	6BR5/EM80
V6	Output	6BQ5/EL84

ELECTROLYTIC CAPACITORS

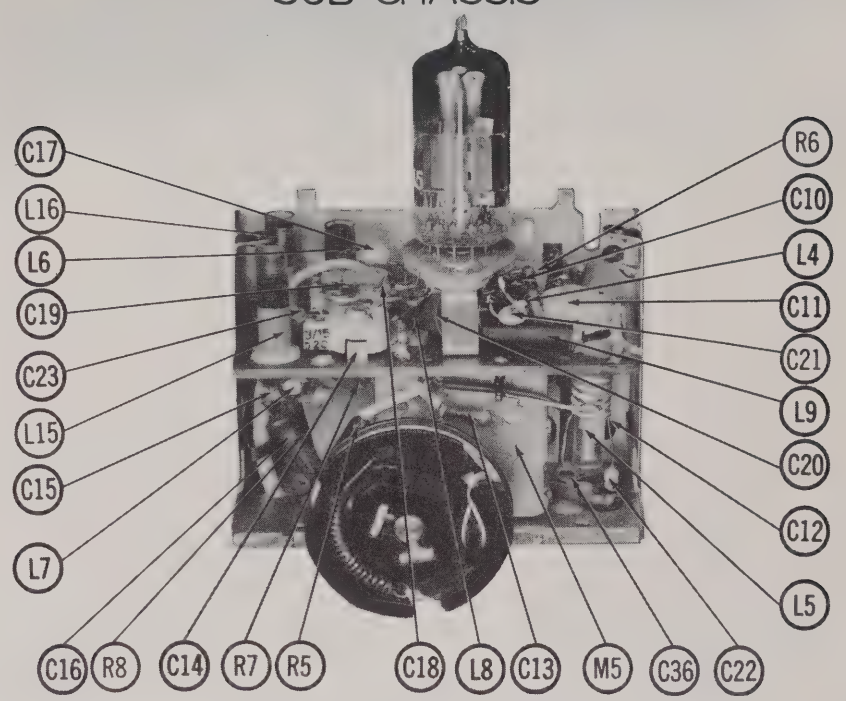
ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA OLYMPIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	50	385		PR4-200	BBRQ0174		CDB-Q-422	D-190	TVA-4750
B	50	385							
C2	4	80		PRS150V4	BBR4-150	TC40	TD-4-150	MT-1504	TVA-1402
C3	32	385		PRS450V30	BR3045	TC77	TD-30-450	MT-4530	TVA-1711
C4	100	15		PRS15V100	BBR100-15	TC2501	TD-100-15	MTH-1510	TVA-1160
C5	50	15		PRS25V50	BR1005	TC29	TD-50-25	MTH-0250	TVA-1206

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA OLYMPIC PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C6	5			DI-000005	DD-050	L10V5	ED-5	UC-555	5GA-V5	
C7	5			DI-000005	DD-050	L10V5	ED-5	UC-555	5GA-V5	
C8	40									
C9	40									
C10	100			SI 100	D6-101	LT6T1	GP-100	UC-531	5GA-T1	
C11	2-10									
C12	550									
C13	20									
C14	3-15									
C15	50			SI 50	D6-500	LT6Q5	GP-50	UC-545	5GA-Q5	
C16	320									①
C17	10									
C18	2-10									
C19	20			SI 20	D6-200	LT6Q2	GP-20	UC-542	5GA-Q2	
C20	30			SI 30	D6-300	LT6Q3	GP-30	UC-543	5GA-Q3	
C21	500			BPD-0005	DD-501	L10T5	ED-500	UC-535	5GA-T5	
C22	1000		COG25038	EF-001	MFT-1000				503C-D1	
C23	10			BPD-00001	DD-100	L10Q1	ED-10	UC-541	5GA-D1	
C24	500			SI 500	D6-501	LT6T5	GP-500	UC-545	5GA-T5	
C25	50									
C26	1000			SI 1000	D6-102	LT6D1	GP-1000	UC-521	5GA-D1	
C27	5000			SI 5000	D6-502	LT6D5	GP-5000	UC-525	5GA-D5	
C28	50									
C29	100			SI 100	D6-101	LT6T1	GP-100	UC-531	5GA-T1	
C30	5000			SI 5000	D6-502	LT6D5	GP-5000	UC-525	5GA-D5	
C31	50									
C32	20									
C33	50									
C34	435									
C35	5000			SI 5000	D6-502	LT6D5	GP-5000	UC-525	5GA-D5	
C36	1000		COG25038	EF-001	MFT-1000				503C-D1	
C37	5			DI-000005	DD-050	L10V5	ED-5	UC-555	5GA-V5	
C38	20			SI 20	D6-200	LT6Q2	GP-20	UC-542	5GA-Q2	
C39	300			SI 300	D6-301	LT6T3	GP-300	UC-533	5GA-T3	
C40	300			SI 300	D6-301	LT6T3	GP-300	UC-533	5GA-T3	
C41	5000			SI 5000	D6-502	LT6D5	GP-5000	UC-525	5GA-D5	
C42	100			SI 100	D6-101	LT6T1	GP-100	UC-531	5GA-T1	
C43	5000			SI 5000	D6-502	LT6D5	GP-5000	UC-525	5GA-D5	
C44	5000			SI 5000	D6-502	LT6D5	GP-5000	UC-525	5GA-D5	
C45	15			BPD-000015	DD-150	L10Q15	ED-15	UC-5415	5GA-Q15	
C46	60									
C47	300			SI 300	D6-301	LT6T3	GP-300	UC-533	5GA-T3	
C48	300			SI 300	D6-301	LT6T3	GP-300	UC-533	5GA-T3	
C49	500			SI 500	D6-501	LT6T5	GP-500	UC-535	5GA-T5	
C50	100			SI 100	D6-101	LT6T1	GP-100	UC-531	5GA-T1	

SUB CHASSIS



CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA OLYMPIC PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C51	500			SI 500	D6-501	LT6T5	GP-500	UC-535	5GA-T5	
C52	1000			SI 1000	D6-102	LT6D1	GP-1000	UC-521	5GA-D1	
C53	5000			SI 5000	D6-502	LT6D5	GP-5000	UC-525	5GA-D5	
C54	10000			SI 10000	D6-103	LT6S1	GP-10000	DC511	5GA-S1	
C55	60									
C56	20000			BPD-02	DD-203	LT6S2	ED-02		5HK-S2	
C57	.05	250		P488N-05	DF-503	CUB4S5		GEM-415	4TM-S5	
C58	10000			SI 10000	D6-103	LT6S1	GP-10000	DC511	5GA-S1	
C59	20000			BPD-02	DD-203	LT6S2	ED-02		5HK-S2	
C60	5000			SI 5000	D6-502	LT6D5	GP-5000	UC-525	5GA-D5	
C61	300			SI 300	D6-301	LT6T3	GP-300	UC-533	5GA-T3	
C62	300			SI 300	D6-301	LT6T3	GP-300	UC-533	5GA-T3	
C63	5000			SI 5000	D6-502	LT6D5	GP-5000	UC-525	5GA-D5	
C64	10000			SI 10000	D6-103	LT6S1	GP-10000	DC511	5GA-S1	
C65	200			SI 200	D6-201	LT6T2	GP-200	UC-532	5GA-T2	
C66	5000			SI 5000	D6-502	LT6D5	GP-5000	UC-525	5GA-D5	
C67	.1	125		P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C68	.1	125		P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C69	20000			BPD-02	DD-203	LT6S2	ED-02		5HK-S2	
C70	5000			SI 5000	D6-502	LT6D5	GP-5000	UC-525	5GA-D5	

① Some versions use a 350mmf in this application.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA OLYMPIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	1.4meg		PTG25056					Volume, Tap ② 50K & 100K
R2	5meg		PTG25052					Bass
R3	1meg		PTG25051					Treble

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	OLYMPIC PART No.	NOTES
R4	100Ω			
R5	2000Ω			
R6	200Ω			
R7	500K			
R8	10K 5%	1		
R9	10K 5%			
R10	1meg 5%			
R11	1000Ω			
R12	30K 5%	1		
R13	30K 5%			
R14	300Ω 5%			
R15	30K 5%	1		
R16	1meg 5%			
R17	1000Ω 5%			
R18	100K			
R19	50Ω			
R20	50K			
R21	600Ω 5%			
R22	30K 5%			
R23	4meg			
R24	1meg 5%			Note 1
R25	1meg			
R26	100K			
R27	200K			
R28	15meg			
R29	200K 5%			
R30	100K			
R31	100Ω 5%			
R32	2000Ω			
R33	50K 5%			
R34	50K 5%			
R35	50K 5%			
R36	10K			
R37	700K 5%			
R38	1000Ω 5%			
R39	1000Ω 5%			
R40	140Ω 5%			
R41	100K			
R42	2000Ω			
R43	600Ω	4		
R44	500K			

Note 1. Some versions may use 2meg in this application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA OLYMPIC PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	220V Tap ② 150V, 127V & 117V ② .48A	250V ② .06A	6.3V ② 2.6A		TRG25058 (NTR06A)					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA OLYMPIC PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	4400Ω CT	3-4Ω	TRG25060 ① TRG25059 ②						① Used in Models Cremona 5804 T/W, 5805 T/W ② Used in Model Magnet 5735W

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA OLYMPIC PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	10"X8"	PM	3-4Ω	SKG25095		① Electrostatic Type ② Alternate Part Number used in some versions.
SP2	3" X 5"	PM	3-4Ω	SKG25063		
SP3	3" X 5"	PM	3-4Ω	SKG25063		
SP4				SKG25033 ①		
	6" X 8"	PM		SKG25061 ②		

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA OLYMPIC PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	Isolation Choke		19-1003	BC-564	4608	3.5 Microhenries
L2	FM Ant. Trap Coil					
L3	FM Ant. Trans					
L4	RF Choke					Wound on 100Ω resistor
L5	FM RF Coil					
L6	FM Osc. Coil					
L7	RF Choke		19-1001	BC-562	4604	1.7 Microhenries
L8	Cathode Choke					
L9	Fil. Choke		19-1001	BC-562	4604	1.7 Microhenries
L10	SW Ant. Trans					

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (cont)

ITEM No.	USE	REPLACEMENT DATA OLYMPIC PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L11	Ant. Trap					
L12	Loop Stick	LPG25049				
L13	BC Osc. Coil					
L14	SW Osc. Coil					
L15	1st FM IF Pri.					
L16	1st FM IF Sec.					
L17	RF Choke					3.3 Microhenries
L18A	2nd FM IF	TRG25047				
B	1st AM IF					
L19	Fil. Choke		19-1001	BC-562	4604	1.7 Microhenries
L20A	FM Ratio Det.	TRG25048				
B	2nd AM IF					
L21	Fil. Choke		19-1001	BC-562	4604	1.7 Microhenries
L22	Line Choke					
L23	Line Choke					

RECTIFIER

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA OLYMPIC PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	NOTES
M1	.060A	RFG25034 ① (B250-C100N)		60-9150 ②		

① Alternate Part #RFG25094 (B250-C75W).
② Two required.

FUSE

ITEM No.	TYPE	RATING	REPLACEMENT DATA OLYMPIC PART No. FUSE	OLYMPIC PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M2			FUG25037					

MISCELLANEOUS

ITEM No.	PART NAME	OLYMPIC PART No.	NOTES
M3	Pilot Light	BUG25035	7V .3A
M4	AM Tuning Cap	CVG25057	2 Gang (Ant. 12-550mmf, Osc. 12-550mmf)
M5	FM Input Unit	CVG25045	Complete
M6	Piano Keyboard	PBG25046	Complete
	Keys	MPG25041	Complete Set (For M6)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	KNG25066	Brown, Small
Knob	KNG25066-1	Ivory, Small
Knob	KNG25067	Brown, Large
Knob	KNG25067-1	Ivory, Large
Cabinet	CAG25123	Walnut, Model Cremona 5804
Cabinet	CAG25124	Blonde, Model Cremona 5805
Cabinet	CAG25064	Model Magnet 5735W
Dial Scale	DLG25050	

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

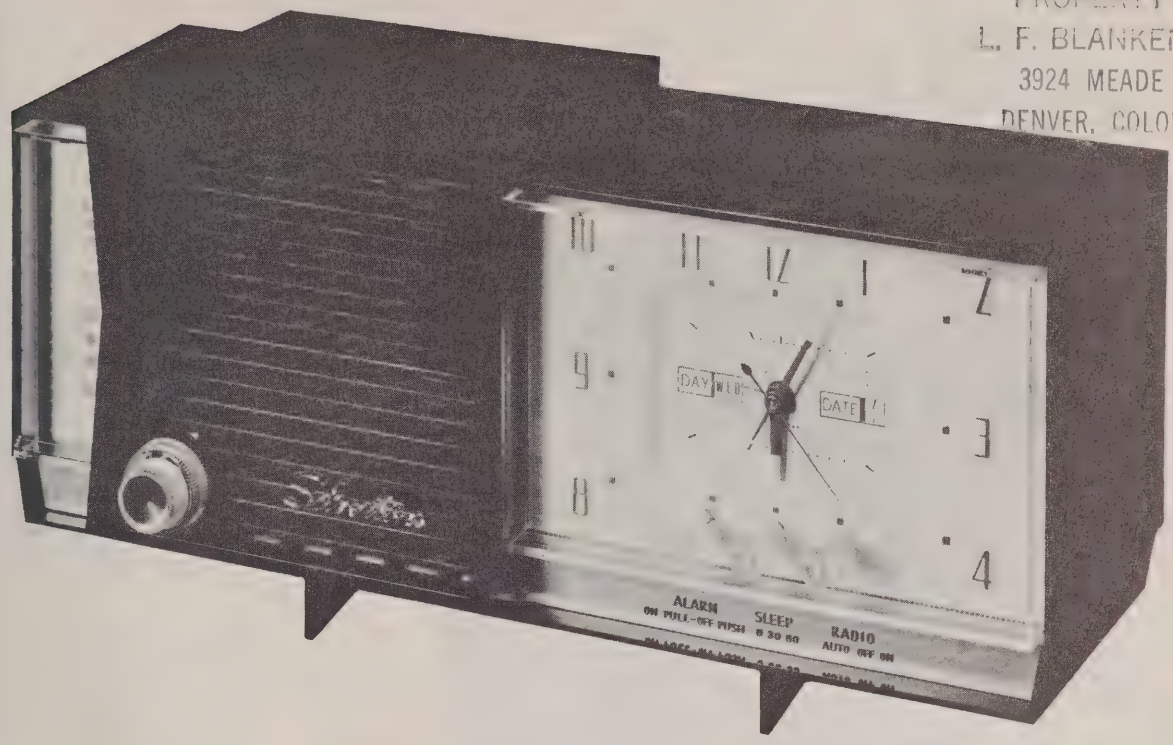
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT* Folder
*TRADE MARK
EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

SILVERTONE MODELS 8025, 8026, 8027 (Ch. 528.53090)

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

SILVERTONE MODELS 8025, 8026, 8027 (Ch. 528.53090)



SILVERTONE MODELS 8025, 8026, 8027 (Ch. 528.53090)

TRADE NAME	Silvertone Models 8025, 8026, 8027 (Ch. 528.53090)
SUPPLIER	Sears, Roebuck & Co., 925 S. Homan Ave., Chicago, Ill.
TYPE SET	AC Operated AM Receiver With Electric Clock
TUBES (Six)	Types 6BJ6 RF Amplifier, 12BE6 Converter, 6BJ6 IF Amplifier, 12AV6 Det.-AVC-AF Amp., 50C5 Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC - 60 Cycles
RATING	.27 Amp. @ 117 Volts AC (27 Watts Without Clock)
TUNING RANGE—BROADCAST	535 to 1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to pin 7 (grid) of 12BE6 (V2). Low side to B-.	455KC (400∿ Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum deflection.
2.	"	"	1620KC	"	"	A5	"
3.		Loop	1400KC	1400KC	"	A6, A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.		Loop	600KC	600KC	"	A8	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Rock tuning gang while adjusting.
5.		Loop	600KC	600KC	"	A9	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Repeat steps 2, 3, 4 & 5 until no further improvement is obtained.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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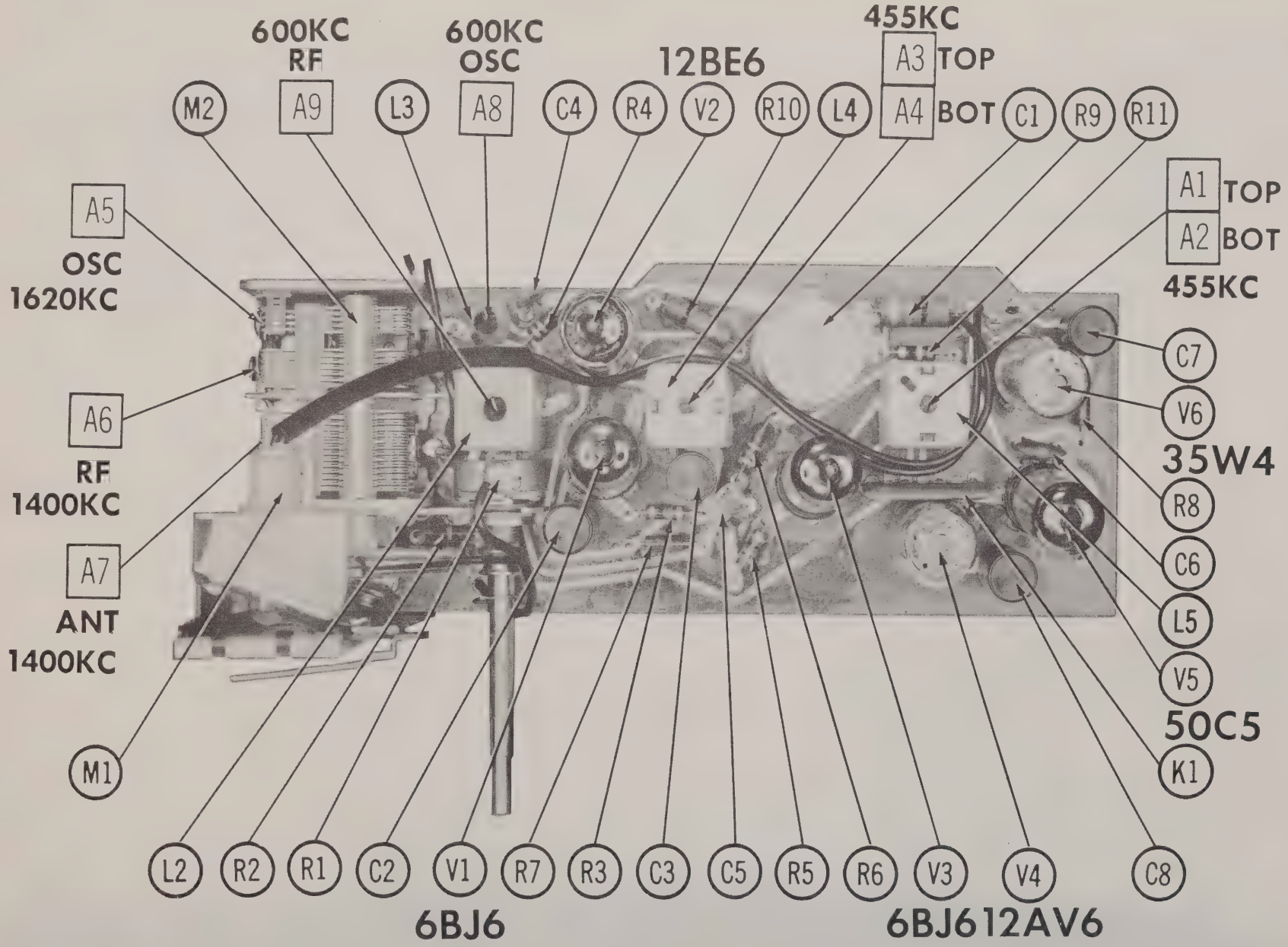


CHASSIS-TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	6BJ6	
V2	Converter	12BE6	
V3	IF Amplifier	6BJ6	
V4	Det. - AVC - AF Amp.	12AV6	
V5	Output	50C5	
V6	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	SILVERTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■70	150	18-58-5	PRS150V8040	BBRD8415	PFP214.3	TDLD-11	MTD-303	TVA-2460
B	▲30	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	.047	200	20-47-1	P288N-047		BC2S47J		ACE6147	2SE-S47	
C3	.047	200	20-47-1	P288N-047		BC2S47J		ACE6147	2SE-S47	
C4	47		15-470-118							N3300 10%
C5	100		15-10111	N750-DI 100	TCN-100	C10T1U	TC7-100	NT-531	5TCU-T1	N750
C6	5000		15-50217	BPD-005	DD-502	BYA10D5	DD-502	DC525	5HK-D5	
C7	.047	400	20-44-1	P488N-047		BC6S47J		ACE6147	4SE-S47	
C8	.047	200	20-47-1	P288N-047		BC2S47J		ACE6147	2SE-S47	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SILVERTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	1meg	½	24-276-0					Volume

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		SILVERTONE PART No.	NOTES
	OHMS	WATT		
R2	100K		60-10402	
R3	82Ω		60-82001	
R4	22K		60-22302	
R5	68Ω		60-68001	
R6	47K		60-47302	
R7	2.2meg		60-22502	
R8	120Ω		60-12101	
R9	10K	2	60-10321	
R10	1000Ω	1	60-10211	
R11	27Ω		60-27001	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2300Ω	3-4Ω	80-14-1	Z1103	A-2928	A-3876	22S46	S-1X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	SILVERTONE PART No.	QUAM PART No.	
SP1	5"	PM	3-4Ω	33-295-4 ①	5A07	① Includes T1

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		SILVERTONE PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loop Ant.	82-125-1					Includes Cabinet Back
	Loop Ant.	84-3895					Includes Cabinet Back and Line Cord
L2	RF Coil	10-23-0					
L3	Osc. Coil	10-35-4					
L4	Input IF	10-84-2	16-6780	BC-356	13-PC1	RF-4	
L5	Output IF	10-74-2	16-6780	BC-357	13-PC2	RF-4	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	SILVERTONE PART No.	REPLACEMENT DATA
K1	Audio Coup. Net.	5000mmf, 5000mmf, 250mmf, 220mmf, 10meg, 470K, 470K	13-14-3	Sprague DT-6

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M1	Pilot Lamp	89-7	#47
M2	Tuning Cap.	19-24-3	3 Gang (Ant. 35-495mmf)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	52-895-0	Clock Controls (3 Used)
Knob	52-703-0	Tuning
Knob	52-702-0	Volume
Cabinet	42-26-1	Brown, Model 8025
Cabinet	42-27-1	Ivory, Model 8026
Cabinet	42-28-1	Pink, Model 8027
Clock Calendar	59-88	
Clockface	67-633-0	
Clock Window	48-142-1	
Radio Window	48-143-1	
Dial Scale	67-632-0	
Dial Pointer	52-10-1	

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

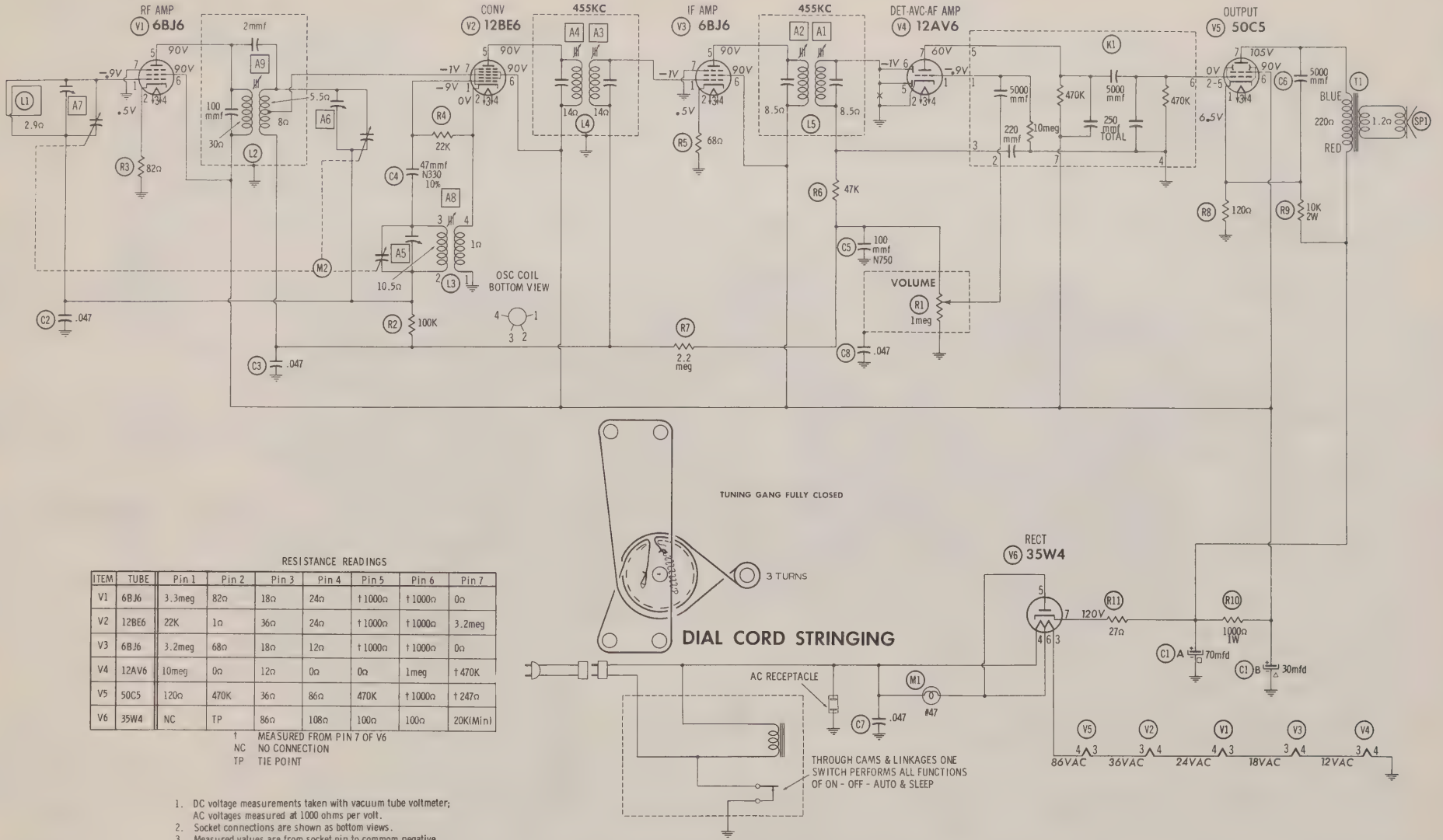
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

SET 389 FOLDER 13

SILVERTONE MODEL 8025 (Ch. 528.53090)

FOLDER 13

SILVERTONE MODEL 8025 (Ch. 528.53090)



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	6BJ6	3.3meg	82Ω	18Ω	24Ω	†1000Ω	†1000Ω	0Ω
V2	12BE6	22K	1Ω	36Ω	24Ω	†1000Ω	†1000Ω	3.2meg
V3	6BJ6	3.2meg	68Ω	18Ω	12Ω	†1000Ω	†1000Ω	0Ω
V4	12AV6	10meg	0Ω	12Ω	0Ω	0Ω	1meg	†470K
V5	50C5	120Ω	470K	36Ω	86Ω	470K	†1000Ω	†247Ω
V6	35W4	NC	TP	86Ω	108Ω	100Ω	100Ω	20K(Min)

† MEASURED FROM PIN 7 OF V6
NC NO CONNECTION
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to commom negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

PHOTOFACT* Folder

SONIC
MODEL TR-500

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

SONIC
MODEL TR-500

SONIC
MODEL TR-500

TRADE NAME	Sonic Model TR-500
MANUFACTURER	Sonic Industries, Inc., 19 Wilbur St., Lynbrook, N. Y.
TYPE SET	Battery Operated Portable Transistorized Receiver
POWER SUPPLY	9 Volts DC
RATING	23MA @ 9 Volts DC
TUNING RANGE—BROADCAST	540 - 1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in the same relative position to chassis as when the receiver is in cabinet.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.		Loop	455KC (400~ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.		"	1600KC	1600KC	"	A4	"
3.		"	1400KC	1400KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Rock tuning gang while adjusting.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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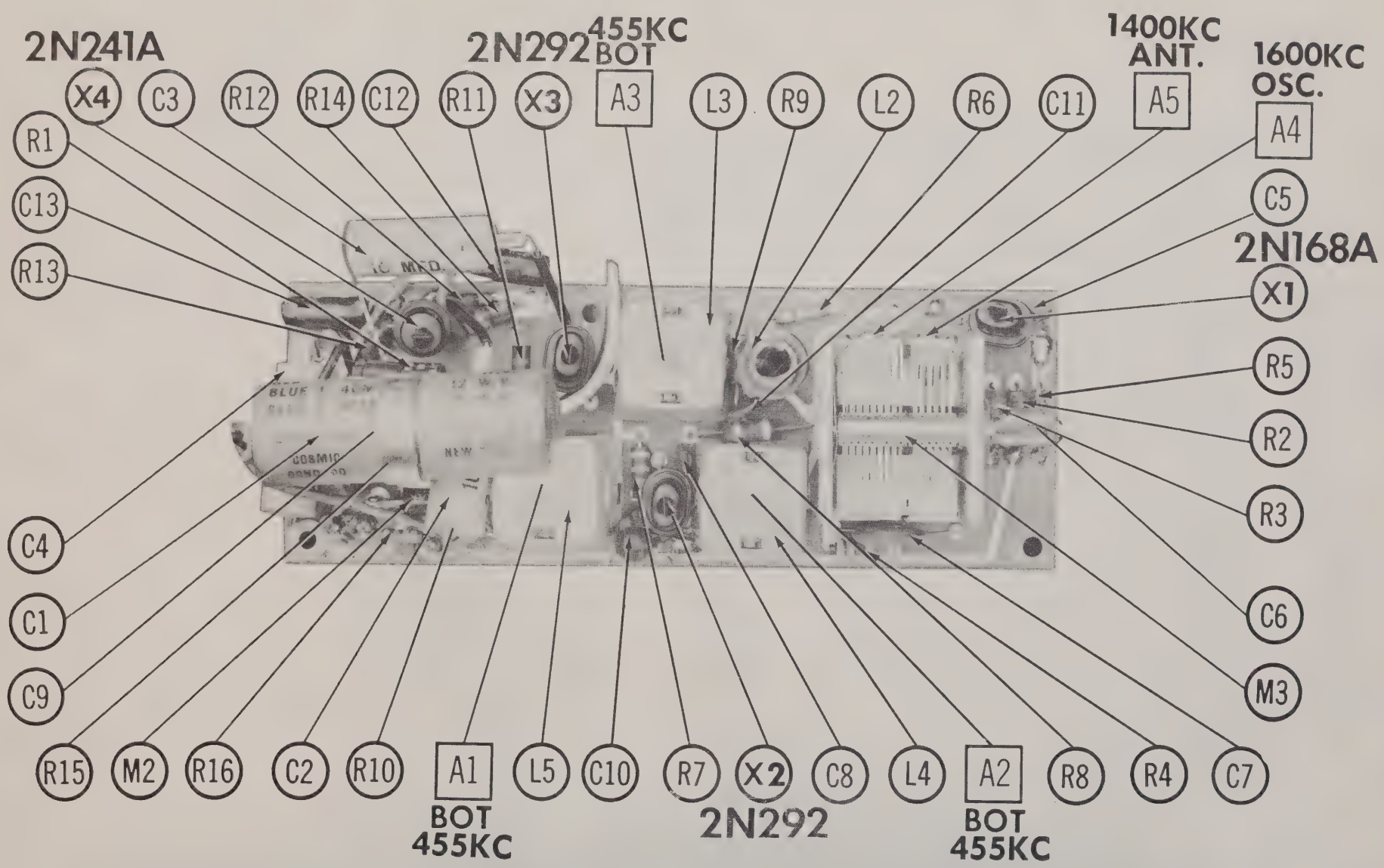


CHASSIS-TOP VIEW

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N168A	Converter	2N439		2N212	
X2	2N292	1st IF Amp.	2N439		2N94	Note 1
X3	2N292	2nd IF Amp. - AF Amp.	2N439		2N94	Note 1
X4	2N241A	Output	2N180	2N360	2N383	

Note 1. Type 2N169 may be used in some versions.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	SONIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	100	12							R2503 *
B	40	12							
C	40	12	①						
C2	2	10	②	XPP10002	NL3-10	TT12X2	ML2-15		R2441 *
C3	10	10	①	XPP10010	NL10-10	TT12X10	ML10-15	MMT-0210	TE-1114
C4	10	10		XPP10010	NL10-10	TT12X10	ML10-15	MMT-0210	TE-1114

① In some versions C1C and C3 are reversed. ② Not used in some versions. * Non Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	SONIC PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C5	10000								TG-S10	
C6	10000								TG-S10	
C7	10000								TG-S10	
C8	10000								TG-S10	
C9	10000								TG-S10	
C10	10000								TG-S10	
C11	.05	200							TG-S50	
C12	.05	200							TG-S50	①
C13	.05	200							TG-S50	

① Not used in some versions.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SONIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	5000Ω	½	TR-6-4					Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		SONIC PART No.	NOTES
	OHMS	WATT		
R2	27K			
R3	9100Ω			Note 1
R4	470Ω			
R5	1500Ω			
R6	3300Ω			
R7	3300Ω			
R8	9100Ω			Note 1

ITEM No.	RATING		SONIC PART No.	NOTES
	OHMS	WATT		
R9	82K			
R10	2700Ω			Note 2
R11	150Ω			Note 3
R12	1000Ω			Note 4
R13	5600Ω			Note 4
R14	68Ω			
R15	100K			
R16	3300Ω			

Note 1. Some versions may use 10K in this application.
Note 2. Some versions may use 1200Ω in this application.
Note 3. Some versions may use 470Ω in this application.
Note 4. Not used in some versions.

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	SONIC PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	352Ω	3-4Ω	Part of Spkr.						

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	SONIC PART No.	QUAM PART No.	
SP1	3½"	PM	3-4Ω	4666	3A07	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		SONIC PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Stick					
L2	Osc. Coil					
L3	1st IF					
L4	2nd IF					
L5	3rd IF					

BATTERIES

ITEM No.	VOLTAGE	SONIC PART No.	REPLACEMENT DATA								NOTES
			BURGESS		EVEREADY		MALLORY		RAY-O-VAC		
			"A"	"B"	"A"	"B"	"A"	"B"	"A"	"B"	
M1	9V			P6		226		M1600		1600	

CRYSTAL DIODES

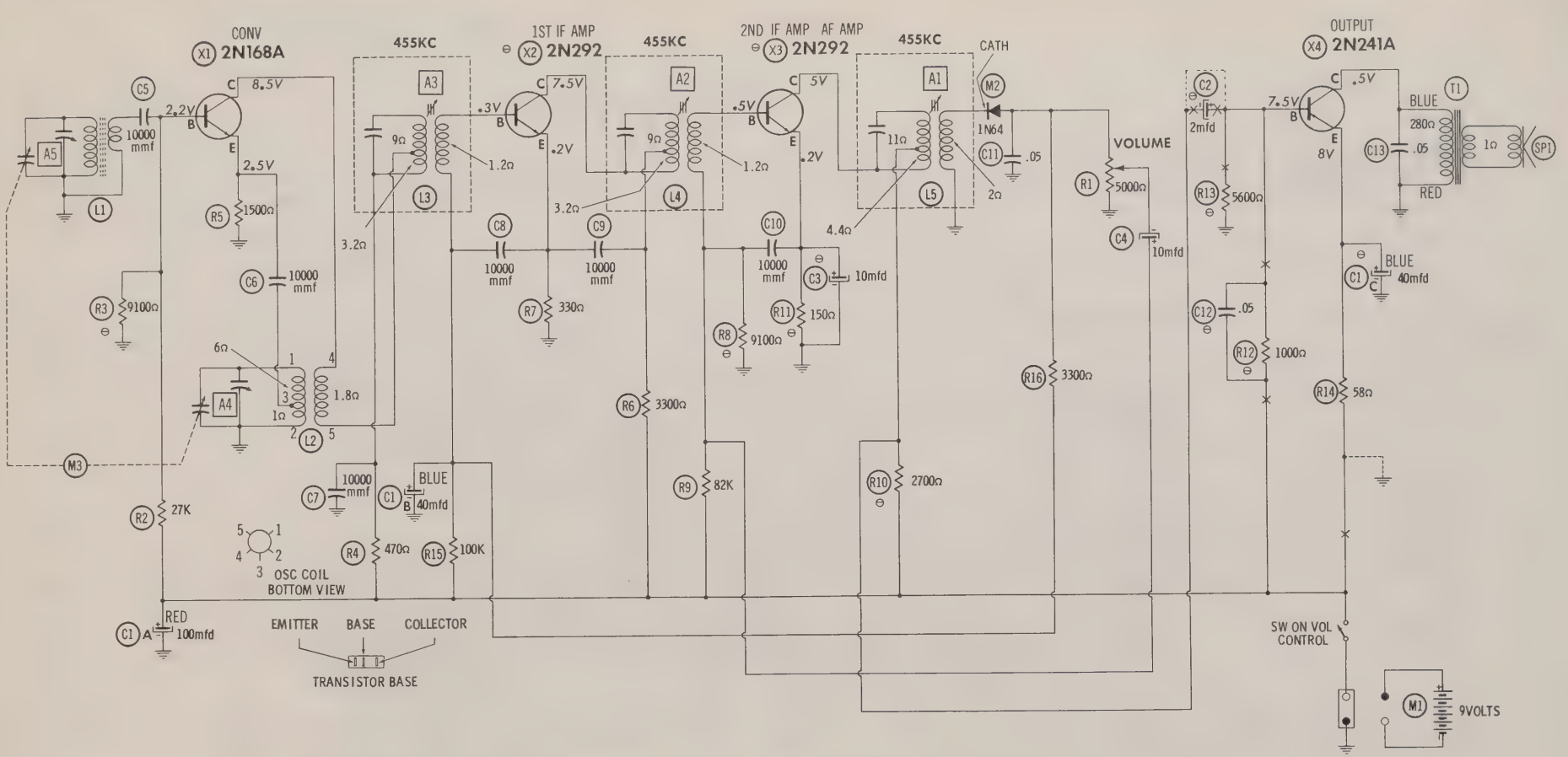
ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		SONIC PART No.	CBS PART No.	SYLVANIA PART No.	
M2	1N64		1N64	1N60	Audio Detector

MISCELLANEOUS

ITEM No.	PART NAME	SONIC PART No.	NOTES
M3	Tuning Cap.		2 Gang (Ant. 13-220mmf)

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors



ITEM	TYPE	BASE	EMITTER	COLLECTOR
X1	2N168A	9100Ω	1500Ω	† 470Ω
X2	2N292	7700Ω	330Ω	† 3300Ω
X3	2N292	9100Ω	150Ω	† 2700Ω
X4	2N241A	5000Ω	† 58Ω	280Ω

TRANSISTORS REMOVED FOR RESISTANCE MEASUREMENTS
† MEASURED FROM JUNCTION OF R2 AND C1A

θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC

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PHOTOFACT* Folder
*TRADE MARK

STEELMAN MODEL 4RP7

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

STEELMAN
MODEL 4RP7

STEELMAN
MODEL 4RP7

TRADE NAME	Steelman Model 4RP7
MANUFACTURER	Steelman Phono and Radio Co., Inc., 12-30 Anderson Ave., Mt. Vernon, N.Y.
TYPE SET	AC Operated AM Receiver with 4Speed Manual Record Player
TUBES (Four)	Types 12AU6 Converter, 12AV6 (or) 12AT6 Det.-AF Amp., 50C5 Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles
RATING	.47 Amp. @117 Volts AC (47Watts with Motor)
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-.

ALIGNMENT INSTRUCTIONS

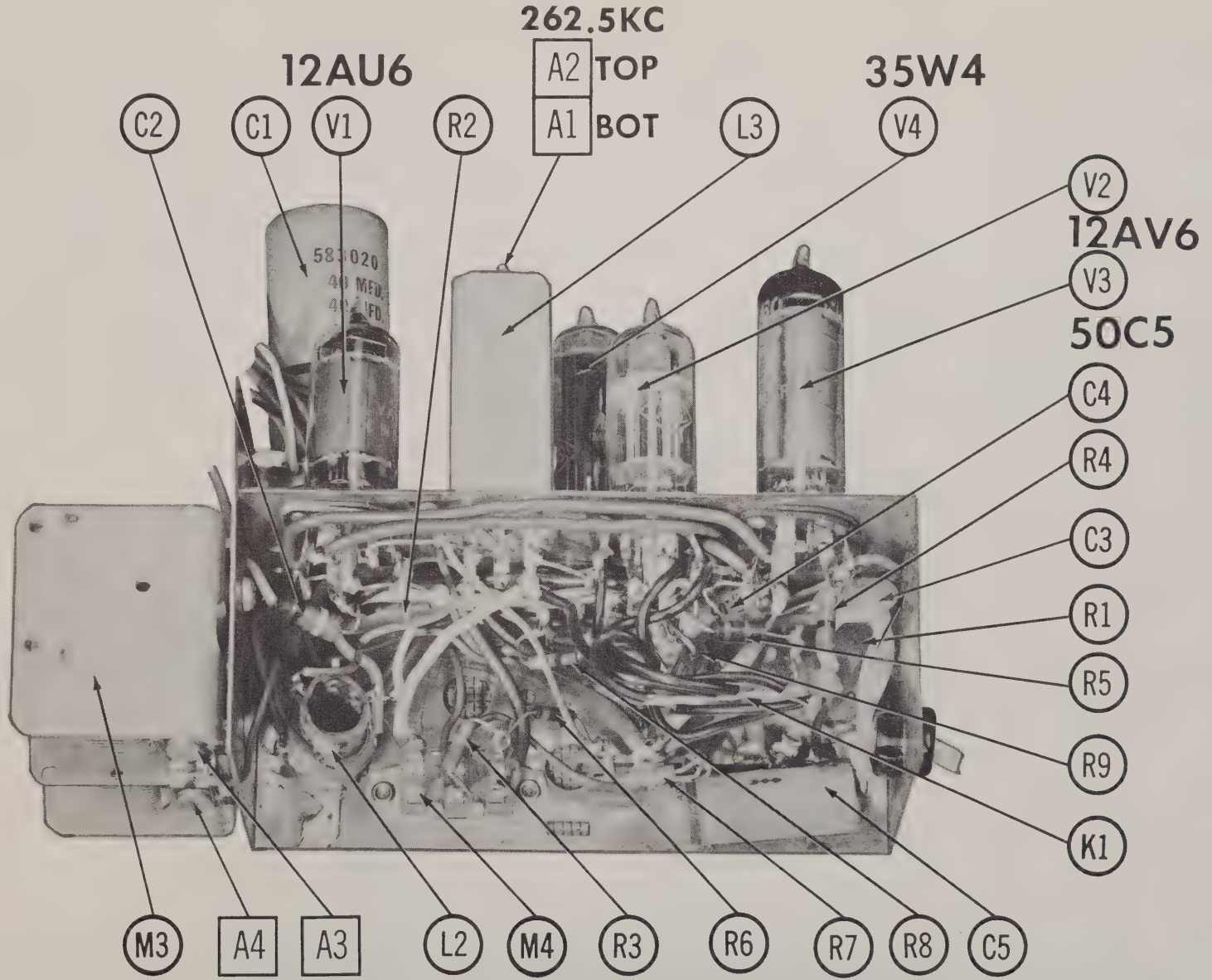
	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to pin 1 (grid) of 12AU6 (V1) Low side to B-.	262.5KC (400~ Mod)	Tuning gang fully open	Across voice coil.	A1, A2	Adjust for maximum output.
2.		Loop	1600KC	Tuning gang fully open	Across voice coil.	A3, A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1958 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America

H285

FOLDER 15



CHASSIS-BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	12AU6	
V2	Det.-AF Amp.	12AV6	Note 1

ITEM No.	USE	TYPE	NOTES
V3	Output	50C5	
V4	Rectifier	35W4	

Note 1. Alternate type 12AT6

ELECTROLYTIC CAPACITOR

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	STEELMAN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	40	150	583020	PRS150V404020	BBRT44215	TCT3116	TDLT-4	FMT-315	TVA-3451
B	40	150							
C	20	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	STEELMAN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	47			N750-SI47	TCN-47	CTA6Q47U	TCN-47	NT-5447	5TCU-Q47	N750 5%
C3	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C4	.05	200		P288N-05	DF-503	CUB2S5		GEM-415	2TM-S5	
C5	.1	400		P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	

CONTROL

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	STEELMAN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1meg	½	360081	B-70	A47-1meg-Z	Q13-137	U53	Volume
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			KB-1	SWE-12	76-1	US-26	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		STEELMAN PART No.	NOTES
	OHMS	WATT		
R2	2.2meg			
R3	22K 5%			
R4	100Ω 5%			
R5	150Ω			

ITEM No.	RATING		STEELMAN PART No.	NOTES
	OHMS	WATT		
R6	1meg			
R7	470K			
R8	2400Ω			
R9	47Ω	1		

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	STEELMAN PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2400Ω	3-4Ω	Part of Speaker	Z1101 ①	A-3025 ①	A-3332 ①	24S53 ①	S-12X ①	① Bend Ears Down

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	STEELMAN PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	414001 ①	4A07	① Includes T1

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					
		STEELMAN PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Loop Stick	464018					
L2	Osc. Coil	455055					
L3	IF Trans.	450010					

COMPONENT COMBINATION

ITEM No.	USE	DESCRIPTION	PART No.	REPLACEMENT DATA	
K1	Audio Coup. Net.	5000mmf, 5000mmf, 250mmf 220mmf, 470K, 470K, 6.8meg	420006	Aerovox	PA-113-2
				Centralab	PC-151
				Cornell-Dubilier	116TM2
				Erie	1408-02
				Sprague	DT-2

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	STEELMAN PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	MOUNT	
M1	321502	28 *Y28	N4-2J			* Tone arm complete with cartridge.

ASTATIC NEEDLE LISTING SHOWN ABOVE IS SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENT SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	STEELMAN PART No.	JENSEN PART No.	WALCO PART No.	
M2	329201	*J-152 or † J-252 or ♦J-252D	*WA400-2 or † WS400-2 or ♦W-400-AGD	* Metal † Jewel ♦ Diamond

MISCELLANEOUS

ITEM No.	PART NAME	STEELMAN PART No.	NOTES
M3	Tuning Cap	590020	2 Gang (Ant. 35-485 mmf, Osc. 30-228mmf)
M4	Switch	370024	Radio-Phono (Slide Type DP DT)

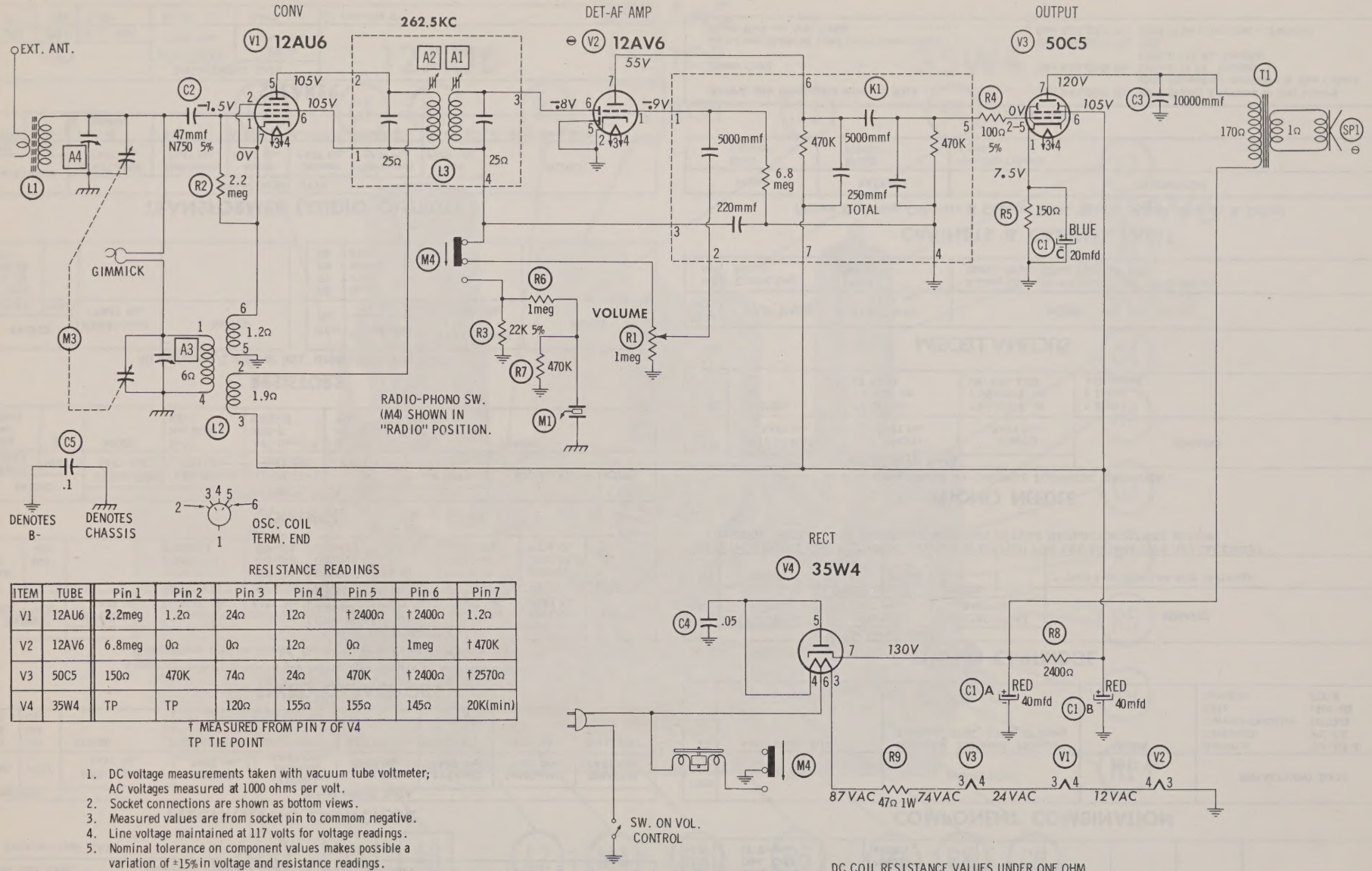
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	270112	On-Off-Volume
Cabinet	230630	Coral

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No.	1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No.	8401
Phono Pick-up Arm Cable	Use BELDEN No.	8430 (Two Conductor - Twisted)



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12AU6	2.2meg	1.2Ω	24Ω	12Ω	†2400Ω	†2400Ω	1.2Ω
V2	12AV6	6.8meg	0Ω	0Ω	12Ω	0Ω	1meg	†470K
V3	50C5	150Ω	470K	74Ω	24Ω	470K	†2400Ω	†2570Ω
V4	35W4	TP	TP	120Ω	155Ω	155Ω	145Ω	20K(min)

† MEASURED FROM PIN 7 OF V4
TP TIE POINT

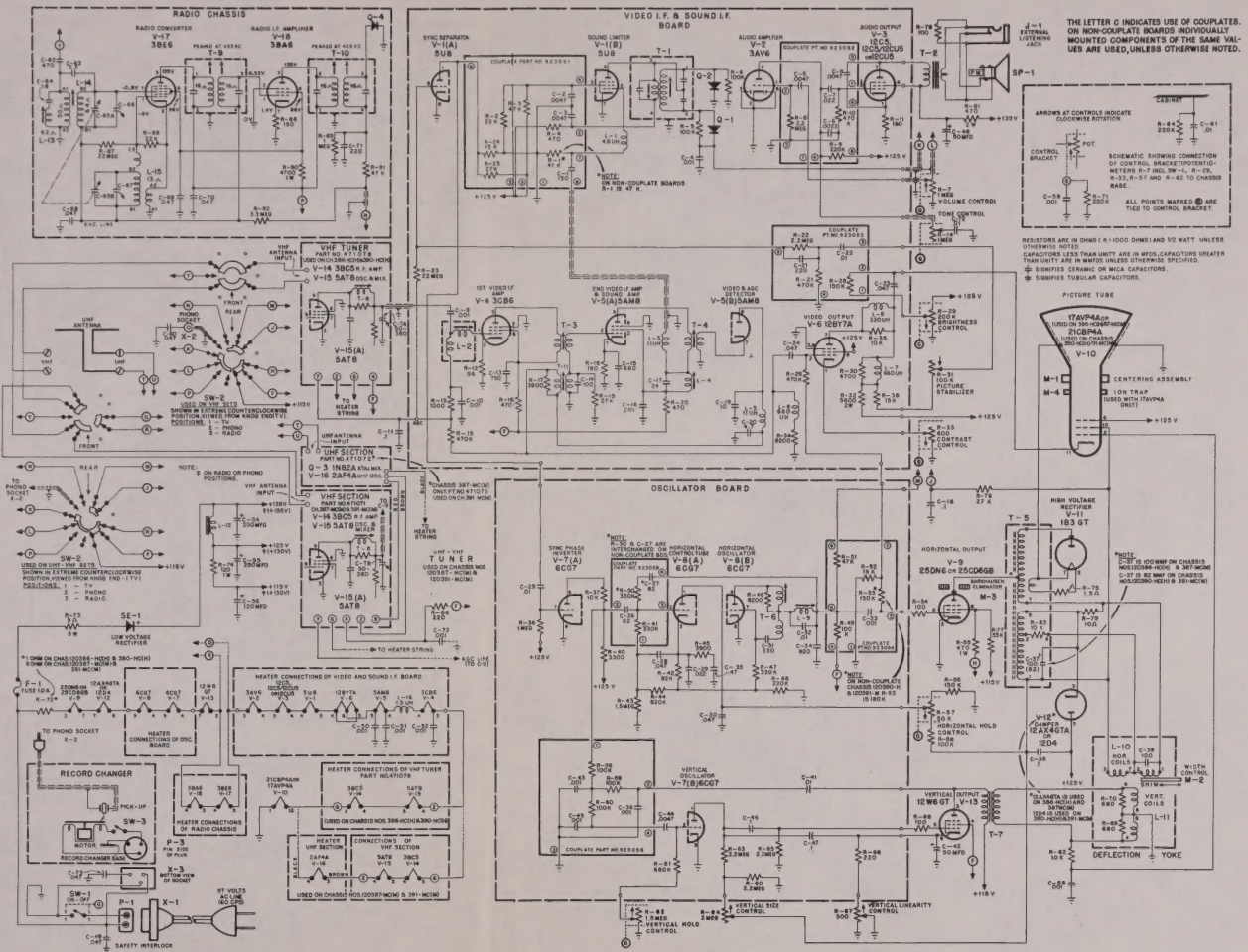
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to commom negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

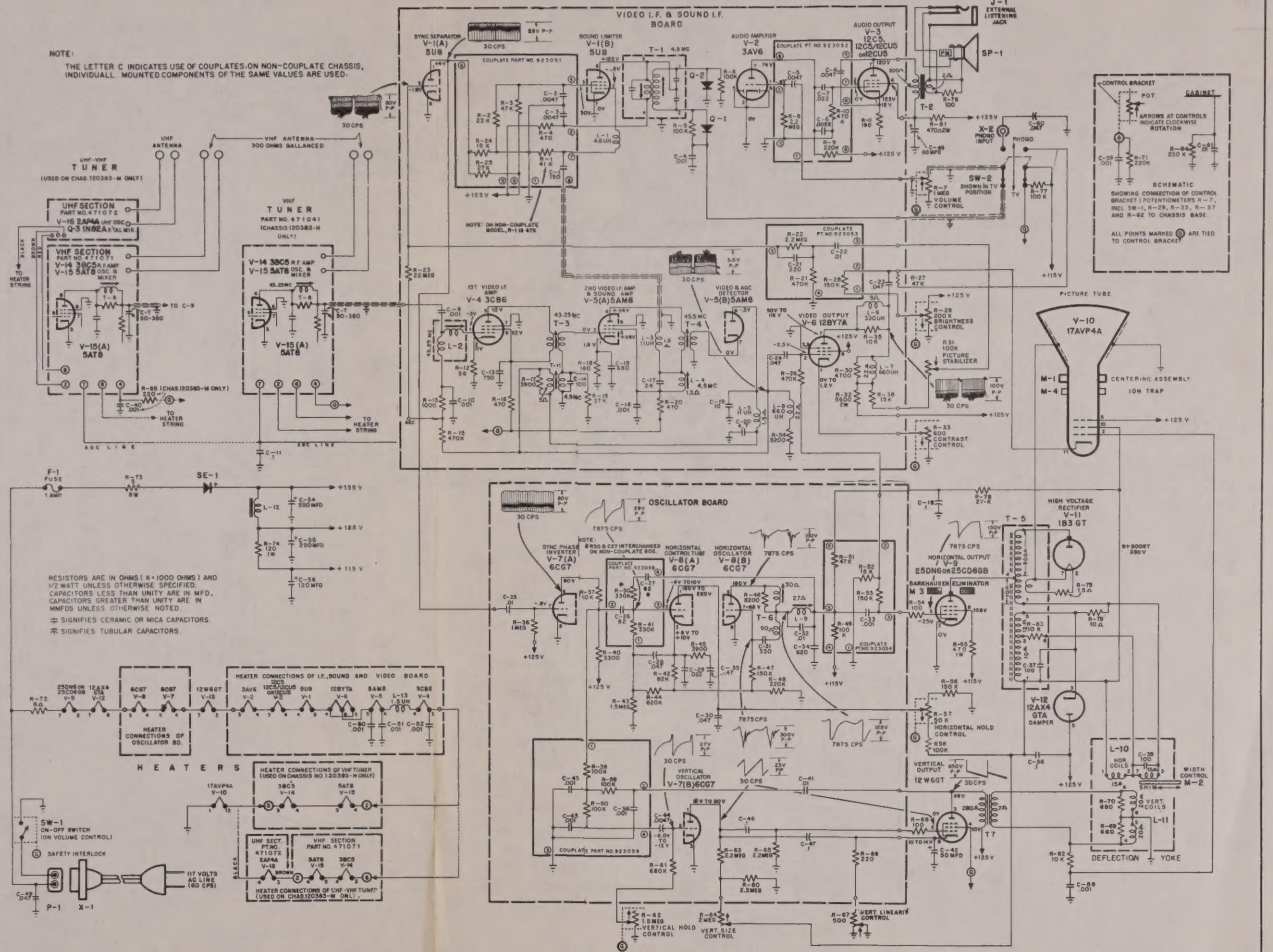
A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

EMERSON MODELS	CHASSIS
1288	120390H, HC
1289	120391M, MC
1290	120386H, HC
1291	120387M, MC


RADIO CHASSIS
VIDEO I.F. & SOUND I.F. BOARD
OSCILLATOR BOARD
THE LETTER C INDICATES USE OF COUPLATES. ON NON-COUPLATE BOARDS INDIVIDUALLY MOUNTED COMPONENTS OF THE SAME VALUES ARE USED, UNLESS OTHERWISE NOTED.
VHF TUNER
UHF SECTION
VHF SECTION
U H F - V H F T U N E R
RECORD CHANGER
PICTURE TUBE
HORIZONTAL OUTPUT
VERTICAL OUTPUT
DEFLECTION YOKE
VOLUME CONTROL
TONE CONTROL
BRIGHTNESS CONTROL
CONTRAST CONTROL
PICTURE STABILIZER
HORIZONTAL HOLD CONTROL
VERTICAL HOLD CONTROL
VERTICAL SIZE CONTROL
VERTICAL LINEARITY CONTROL
WIDTH CONTROL
HIGH VOLTAGE RECTIFIER
LOW VOLTAGE RECTIFIER
SAFETY INTERLOCK
SCHEMATIC SHOWING CONNECTION OF CONTROL BRACKET POTENTIOMETERS R-7 (INCL. SW-1, R-29, R-33, R-57 AND R-62 TO CHASSIS BASE.
ALL POINTS MARKED ⊕ ARE TIED TO CONTROL BRACKET.
RESISTORS ARE IN OHMS (K = 1000 OHMS) 1 AND 1/2 WATT UNLESS OTHERWISE NOTED.
CAPACITORS LESS THAN UNITY ARE IN MFDS. CAPACITORS GREATER THAN UNITY ARE IN MMFDS UNLESS OTHERWISE SPECIFIED.
SIGNIFIES CERAMIC OR MICA CAPACITORS.
SIGNIFIES TUBULAR CAPACITORS.

SCHEMATIC COURTESY OF EMERSON RADIO & PHONOGRAPH CORP.

EMERSON
MODELS CHASSIS
1276 120382H, HC
1277 120383M, MC


NOTE:
THE LETTER C INDICATES USE OF COUPLATES ON NON-COUPLATE CHASSIS, INDIVIDUALLY MOUNTED COMPONENTS OF THE SAME VALUES ARE USED.
VIDEO I.F. & SOUND I.F. BOARD
OSCILLATOR BOARD
UHF TUNER
VHF TUNER
PICTURE TUBE
V-10 17AVP4A
HEATERS
SCHEMATIC COURTESY OF EMERSON RADIO & PHONOGRAPH CORP.

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